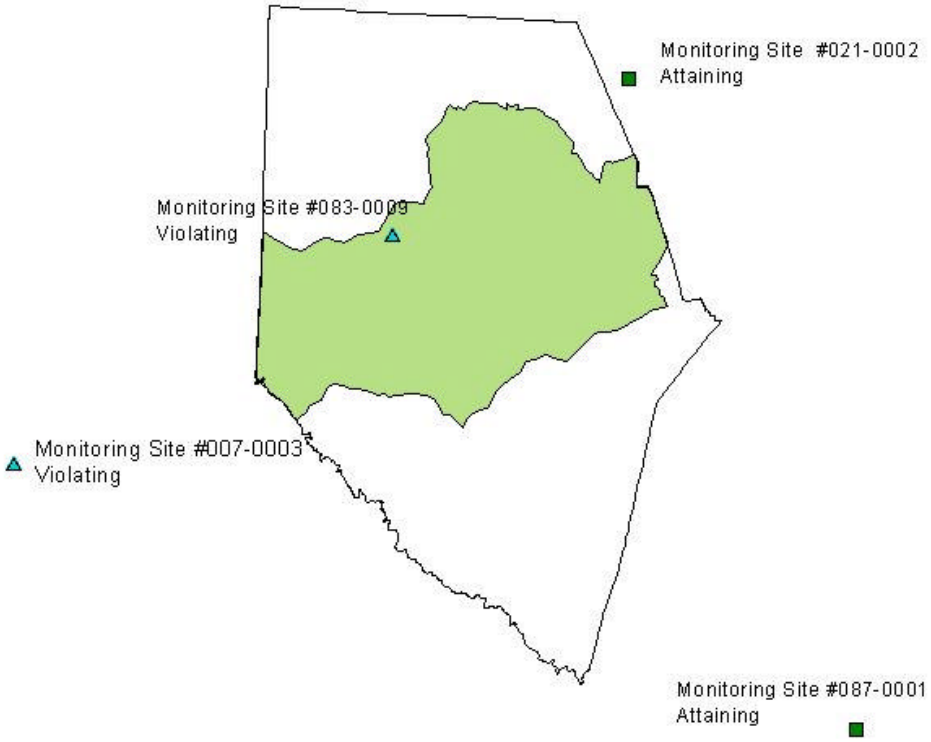
Spartanburg Nonattainment Area
Boundary Recommendation



Boundary Recommendation
Spartanburg County

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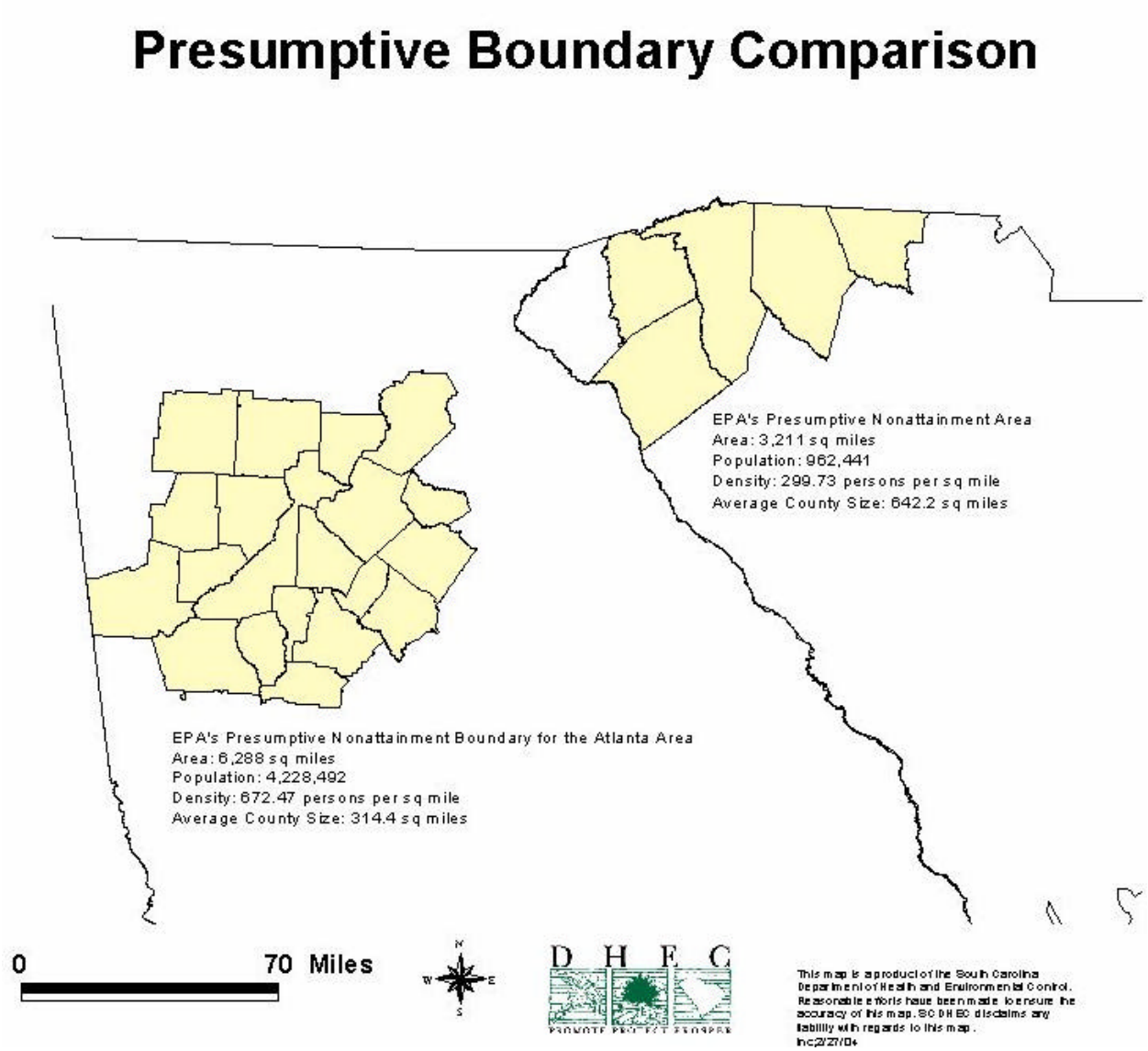
Spartanburg Nonattainment Area
Boundary Recommendation
Summary

Upon review of the ozone nonattainment area boundary recommendations submitted by the South Carolina Department of Health and Environmental Control (Department) on July 14, 2003, and later amended on November 14, 2003, the United States Environmental Protection Agency (EPA), in a letter dated December 3, 2003, notified the Department of its intent to promulgate designations of nonattainment areas in South Carolina with modifications to the Department's recommendations. Specifically, EPA's response indicated that the entire Greenville-Spartanburg-Anderson Metropolitan Statistical Area (MSA), which is based on the 1990 MSA definition, be designated as one nonattainment area. Such a recommendation would include the full counties of Anderson, Cherokee, Greenville, Pickens, and Spartanburg. The Department remains firm in its request that only portions of Anderson, Greenville, and Spartanburg Counties be designated and that their designations be independent of one another. The Department wishes to take this opportunity to again demonstrate why EPA's proposed modifications are inappropriate. The information and data provided below documents, on a technical basis, the Department's reasons for recommending only a **portion** of Spartanburg County as a **separate** nonattainment area.

Based on EPA presumptive boundary sizes, designation of a partial and separate nonattainment area for the Spartanburg boundary is appropriate. Figure 1 shows a side-by-side comparison of the recommended Atlanta, GA 8-hour ozone nonattainment area and the Greenville-Spartanburg-Anderson, SC MSA, (EPA's presumptive boundary for the upstate). Disturbing observations can be made, given that EPA has indicated that these will be the 8-hour ozone nonattainment boundaries for the respective areas. The five counties that make up the Greenville-Spartanburg-Anderson MSA average 641.8 square miles per county. In contrast, the Atlanta area includes 20 counties with an average size of 324.5 square miles per county. The comparative land areas and populations demonstrate a severe inequity in setting boundaries based on EPA's presumptive boundaries.

Figure 1



Based on 2003 MSA Definitions[1], designation of a partial and separate nonattainment boundary for the Spartanburg area is appropriate. Spartanburg County is located in the Upstate Region of South Carolina. Upon analysis of the 2000 Census, including the population dynamics and commuting data, the Office of Management and Budget (OMB) decided to create three separate MSA in the Upstate Region, which indicates that these areas are reasonably detached. The 2003 OMB designations provide justification on a technical basis and helps to substantiate the Department's recommendation of separate nonattainment areas in the Upstate Region.

[1] The definitions for the 2003 MSAs were established by the June 6, 2003, Office of Management and Budget (OMB) Bulletin No. 03-04. This Bulletin establishes revised definitions for the Nation's Metropolitan Statistical Areas and recognizes 49 new Metropolitan Statistical Areas. In addition, the bulletin establishes definitions for two new sets of statistical areas: Micropolitan Statistical Areas and Combined Statistical Areas.

Based on the 2003 MSA definitions, the Upstate Region is divided into three distinct MSAs:

1. Anderson, SC MSA, (Anderson County, SC)
2. Greenville, SC MSA, (Greenville County, SC; Laurens County, SC; Pickens County, SC)
3. Spartanburg, SC MSA, (Spartanburg County, SC)

Two separate Combined Statistical Areas were also designated for the Upstate Region in 2003:

1. Greenville-Anderson-Seneca, SC Combined Statistical Area (Anderson, SC MSA; Greenville, SC MSA; Seneca, SC Micropolitan Statistical Area)
2. Spartanburg-Gaffney-Union, SC Combined Statistical Area (Gaffney, SC Micropolitan Statistical Area; Spartanburg, SC MSA; Union, SC Micropolitan Area)

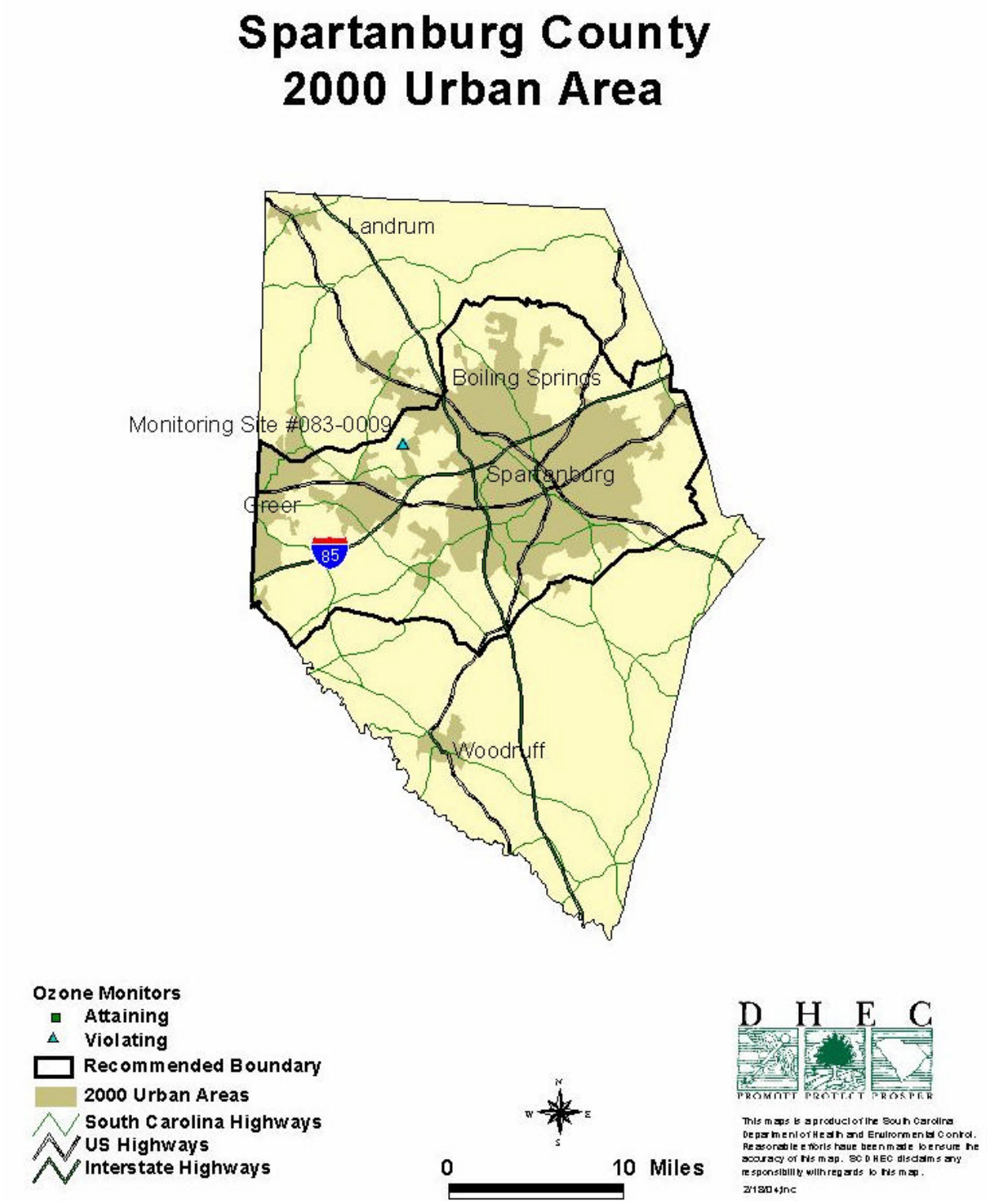
These definitions reflect the Standards for Defining Metropolitan and Micropolitan Statistical Areas that the OMB published on December 27, 2000, in the Federal Register (65 FR 82228 - 82238), and the application of those standards to Census 2000 population and journey-to-work data. The general concept of a Metropolitan Statistical Area or a Micropolitan Statistical Area is that of an area containing a recognized population nucleus and adjacent communities that have a high degree of integrations with the nucleus. For these reasons, the OMB has saw fit to break apart the Greenville-Spartanburg-Anderson MSA.

Furthermore, the Clean Air Act's requirement of MSAs or Consolidated MSAs as the nonattainment boundary applies only to areas designated as **serious** and above. Based on the latest draft proposal by EPA concerning implementation of the 8-hour ozone standard, the violating monitors in the Upstate would be classified as marginal. The OMB has defined metropolitan areas for statistical purposes to include the collection, tabulation, and publication of data by Federal agencies for geographic areas to facilitate the uniform use and comparability of data on a national scale. This was recently confirmed in the December 27, 2000, *Federal Register* notice concerning *Standards for Defining Metropolitan and Micropolitan Statistical Areas* by the OMB. The Department asserts that designating areas under the National Ambient Air Quality Standards is indeed a nonstatistical program. For EPA to default to a presumptive boundary for "consistency" purposes stifles the creativity to improve air quality as expeditiously as possible to bring clean air to the public and rewards those who choose to wait. EPA's broad-brush approach discourages initiatives by local areas, counties, and states to be proactive. Further, for EPA to default to its presumptive boundaries rather than allowing the use of its published criteria significantly changes Congressional intent and EPA's guidelines to a "presumptive norm."

Throughout the rest of this summary of the Spartanburg nonattainment area recommendation, any statistical analysis or evaluation of data will be conducted in comparison to the EPA's presumptive nonattainment area, which includes Greenville, Spartanburg, Anderson, Pickens, and Cherokee Counties (Greenville-Spartanburg-Anderson MSA).

Based on low population and low population density, designation of a partial and separate nonattainment boundary for the Spartanburg area is appropriate. The recommended boundary captures 64.53 percent of the population and 34.93 percent of the land area. Moreover, the boundary includes the majority of the most densely populated land areas within the county. In fact, approximately 19.6 percent of Spartanburg County's land area contains an estimated 80-85 percent of the county's urban population (see figure 2). Additionally, the recommended area, which covers a large percentage of the land area, captures this "contained" urban population, as well as the remaining rural population.

Figure 2


Spartanburg County
2000 Urban Area
Landrum
Boiling Springs
Monitoring Site #083-0009
Spartanburg
Greer
85
Woodruff
Ozone Monitors
Attaining
Violating
Recommended Boundary
2000 Urban Areas
South Carolina Highways
US Highways
Interstate Highways
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Based on low employee percentages and wide distribution of economic sector employees, designation of a partial and separate nonattainment boundary for the Spartanburg area is appropriate. The recommended boundary captures 87.17 percent of the manufacturing employees and 88.31 percent of the manufacturing establishments. Given that the vast majority of the manufacturing establishments and employees in the county are located in the recommended area, that the county is predominantly urban, and that the recommended area contains the urbanized areas in the county, it is reasonably assumed that the majority of the retail trade employees and establishments in the county, as well as other businesses, are contained within the recommended area boundary.

Based on the point source emissions data, designation of a partial and separate nonattainment boundary for the Spartanburg area is appropriate. The recommended boundary captures 98.8 percent of the total point source NO_x emissions and 90.4 percent of the total point source VOC emissions (see figures 3 & 4).

Figure 3: Spartanburg County
Point Source NO_x Emissions

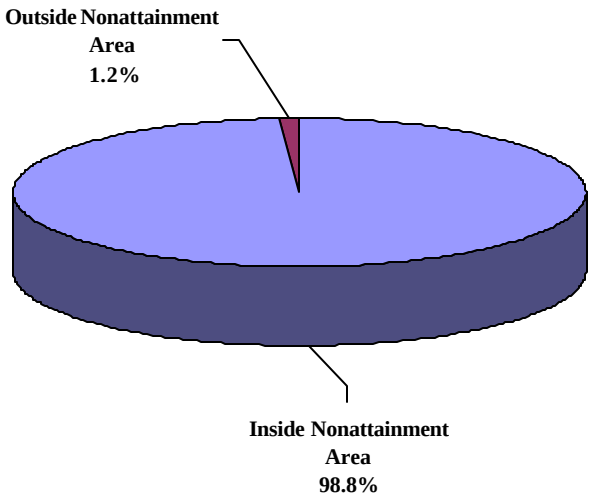
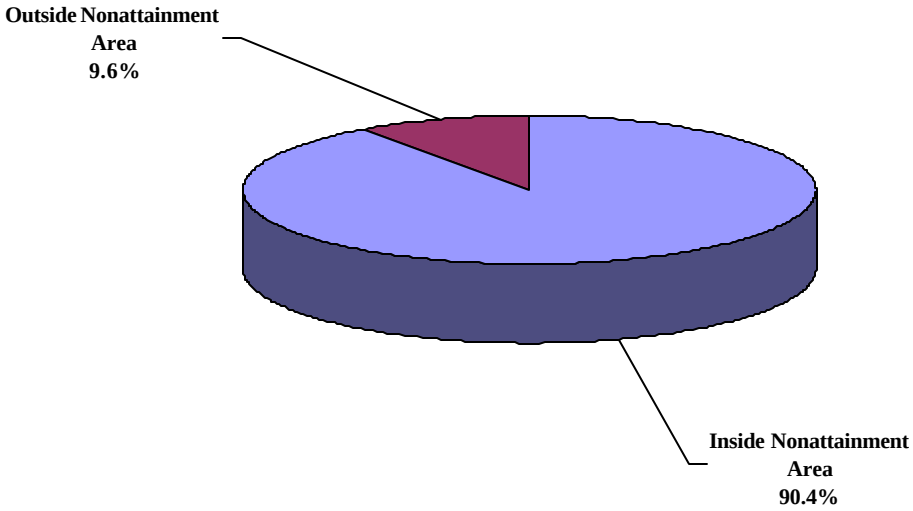


Figure 4: Spartanburg County
Point Source VOC Emissions



Based on commuter flow, designation of a partial and separate nonattainment boundary for the Spartanburg area is appropriate. According to the U.S. Census Bureau, 81.96 percent of workers in the Greenville-Spartanburg-Anderson MSA, work in the same county they live in. Spartanburg County accounts for 26.07 percent of the working population in the MSA. Workers living in Spartanburg and commuting to other counties in the MSA account for only 3.99 percent of the entire MSA worker flow.

Table 1:
County of Residence for Greenville -Spartanburg-Anderson MSA

County Worked In	Anderson	Cherokee	Greenville	Pickens	Spartanburg	Grand Total
Anderson	**12.05%**	0.01%	0.78%	0.84%	0.11%	13.79%
Cherokee	0.01%	**3.71%**	0.05%	0.01%	0.47%	4.26%
Greenville	3.18%	0.10%	**37.43%**	3.49%	3.37%	47.57%
Pickens	0.99%	0.00%	0.59%	**6.69%**	0.05%	8.33%
Spartanburg	0.29%	0.91%	2.59%	0.18%	**22.08%**	26.05%
Grand Total	16.53%	4.73%	41.44%	11.22%	26.07%	100.00%
Out of County Flow	4.48%	1.02%	4.01%	4.53%	3.99%	

Based on South Carolina's commitment to "Cleaner Air Sooner," designation of a partial and separate nonattainment boundary for the Spartanburg area is appropriate. The South Carolina General Assembly passed and our Governor signed a concurrent resolution that endorses Early Action Compacts and encourages state agencies to develop programs that focus on efforts that state government can take to reduce ground-level ozone. At the end of 2002, 45 of South Carolina's 46 counties entered into Early Action Compacts to implement ozone reduction strategies earlier than federally required. These counties, along with other government entities, industry, environmental groups, and other stakeholders

have worked together both at the local level and state level to develop strategies to reduce ozone pollution. The few counties that have been identified by EPA as potential nonattainment areas are actively participating in the Early Action Compact process and are developing local plans to bring cleaner air sooner to their citizens. Most importantly to our future air quality, the 45 counties continue to embrace strategies that are best for improving air quality on a statewide level and not just where boundary lines are proposed to be drawn. These efforts demonstrate a commitment by all involved to protect and improve air quality for the citizens of South Carolina.

Based on South Carolina's statutory authority to require controls on sources regardless of location, designation of a partial and separate nonattainment boundary for the Spartanburg area is appropriate. The Department has the legal authority to seek emission reductions from any source regardless of where it is located if it adversely impacts air quality. The Department currently has regulations that are more stringent and protective than federal requirements. Further, our recent actions such as addressing NO_x emissions from stationary sources demonstrate our ability and political will to implement controls to improve air quality statewide rather than on an area or county level basis.

Based on state and EPA modeling, designation of a partial and separate nonattainment boundary for the Spartanburg area is appropriate. Preliminary results show that all areas of South Carolina will attain the 8-hour ozone standard by 2007 with the reductions attributed to the NO_x SIP Call and the Tier 2/Low Sulfur Fuel regulations. Additionally, a modeling analysis for the year 2012 demonstrates attainment. The results of this modeling verify the regional modeling completed by EPA, which also demonstrated attainment for all South Carolina areas with implementation of the above programs.

Based on the 2001-2003 quality assured data, designation of a partial and separate nonattainment boundary for the Spartanburg area is appropriate. While the monitor in Spartanburg County is currently violating the 8-hour standard, it is bounded by attaining monitors in Cherokee, and Union Counties. Furthermore, the Department believes that the attaining, Cowpens monitor in Cherokee County is most representative of conditions in the northern portion of the county, thus justifying excluding the northern part of Spartanburg County. The monitor in Union County is most representative of southern Spartanburg County, which the Department is not recommending for nonattainment designation. Spartanburg County experienced only three exceedances of the ozone standard value (0.085ppm or higher) in 2003.

Based on a comprehensive ozone-forecasting program that covers twenty-nine (29) counties in our state, including Spartanburg County, designation of a partial and separate nonattainment boundary for the Spartanburg area is appropriate. South Carolina's citizens are alerted on a daily basis during ozone forecasting season as to the predicted quality of the air so that they may take actions as they believe appropriate to better protect their health. The Department has expended and will continue to expend significant resources to provide this service to our citizens. This daily forecast is a much better indication to the public of when they need to act to avoid exposure to high ozone levels than a nonattainment designation, which is a one-time publication in the *Federal Register*.

Based on the unique transportation and air quality planning programs, designation of a partial and separate nonattainment boundary for the Spartanburg area is appropriate. The Spartanburg Area Transportation Study (SPATS) performs transportation planning specific for the urbanized portion of Spartanburg County. Similarly, the Department has a regional environmental office located in Spartanburg County that monitors compliance of the regulated sources within Spartanburg, Cherokee, and Union counties.

Conclusion

The twelve factors listed below represent the most compelling reasons why the Department believes designating only **portions** of Spartanburg County as the nonattainment boundary for the Spartanburg area is appropriate. Additional data to support these factors, as well as other supporting documentation to address EPA's eleven criteria is attached.

1. EPA presumptive boundary sizes.
2. 2003 MSA definitions.
3. Low population and low population density.
4. Low percentage of employees in the recommended area.
5. Low point source emissions in the recommended area.
6. Low MSA commuter flow.
7. Legislative and County support for the Department's "Cleaner Air Sooner" concept.
8. The Department's statutory authority to require controls on sources regardless of location.
9. State and EPA modeling indicating attainment with the ozone standard in 2007 and 2012.
10. Quality assured ozone-monitoring data indicating attainment around portions of the area not recommended.
11. Comprehensive Ozone Forecasting Program.
12. Unique transportation and air quality planning programs.

Supporting Documentation for
Spartanburg Nonattainment Area
Boundary Recommendation

Throughout the rest of this summary of the Spartanburg nonattainment area recommendation, any statistical analysis or evaluation of data will be conducted in comparison to the EPA's presumptive nonattainment area, which includes Greenville, Spartanburg, Anderson, Pickens, and Cherokee Counties (Greenville-Spartanburg-Anderson MSA).

Spartanburg Nonattainment Area
Boundary Recommendation

A. Emissions and Air Quality in Adjacent Areas (Including Adjacent MSAs)

To evaluate the emissions in Spartanburg County and adjacent counties, the Department utilized the estimated 1999 oxides of nitrogen (NO_x) and volatile organic compounds (VOC) emissions. The types of NO_x and VOC emission sources that were evaluated include point, area, biogenic, and off-road and on-road mobile sources.

Figures A-1 and A-2 show a comparison of emission levels from each source category for Spartanburg County and surrounding South Carolina counties. Additional emissions inventory information is provided in Section D.

Figure A-1: NO_x Sources for Spartanburg and Adjacent Counties*

*** Order of bars corresponds with order of counties in legend.**

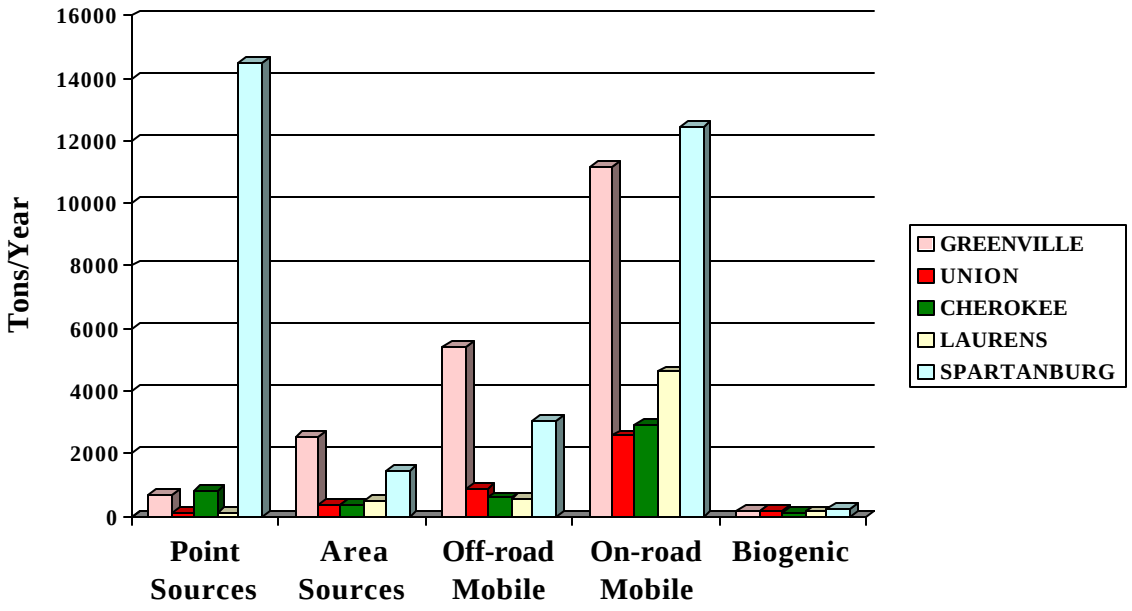
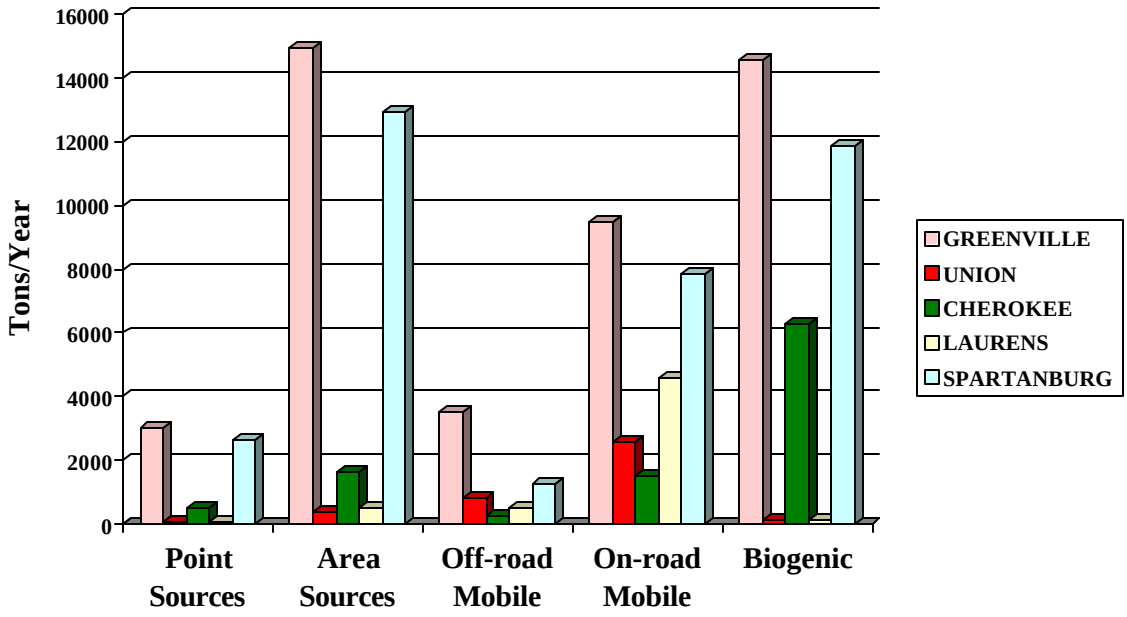


Figure A-2: VOC Sources for Spartanburg and Adjacent Counties
*** Order of bars corresponds with order of counties in legend.**



The Department currently has one ozone-monitoring site in Spartanburg County; the monitor indicates nonattainment of the air quality standard. Spartanburg County is bounded by attaining monitors in Cherokee and Union Counties. Additional air quality information is provided in Section C.

B. Population Density and Degree of Urbanization Including Commercial Development (Significant Difference from Surrounding Areas)

In 2000, Spartanburg County's population was 253,791, and covering 811 square miles, Spartanburg County had a population density of 313 persons per square mile. The county was nearly two-thirds urban, as 64.8 percent of the county's population, or 164,341 people, lived mostly in urbanized areas. The recommended area captures 64.53% of the population, or 163,761 people, and has a population density of 577.1 persons per square mile. Figure B-1 shows that the recommended area contains nearly all of the populated areas in Spartanburg County; the boundary clearly excludes the least populated areas in Spartanburg County. Areas North of the boundary being mountainous and areas South of the boundary being predominantly rural, it is reasonably assumed that the population and population density, as well as the number of businesses, both now and in the future are captured by the recommended area boundary.

Figure B-1

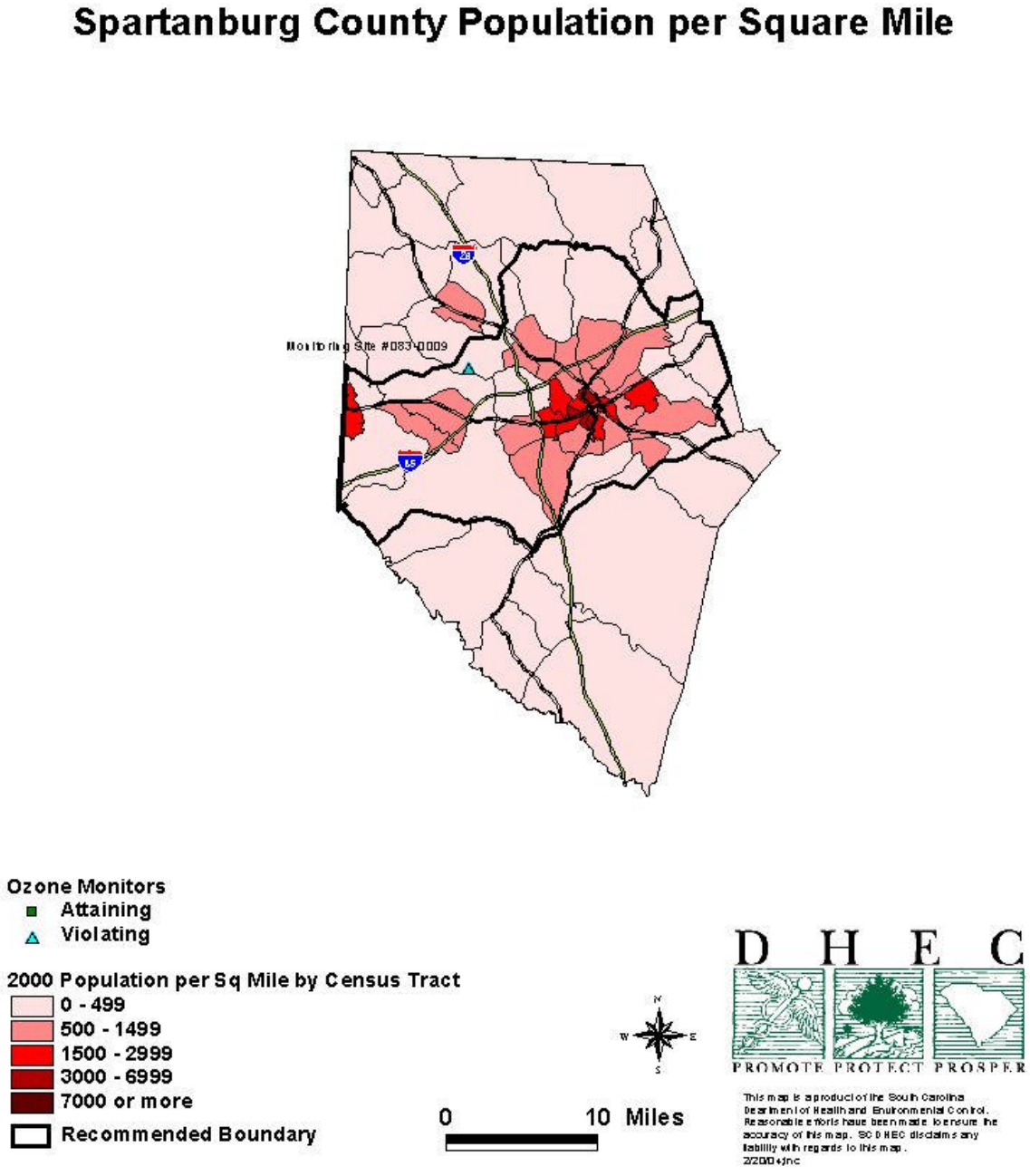

Spartanburg County Population per Square Mile
Monitoring Site #083-0009
Ozone Monitors
Attaining
Violating
2000 Population per Sq Mile by Census Tract
0 - 499
500 - 1499
1500 - 2999
3000 - 6999
7000 or more
Recommended Boundary
0
10 Miles
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Figure B-2 shows the urban areas for Spartanburg County. Approximately 19.6% of Spartanburg County's land area encompasses an estimate 80-85% of the urban population.

Figure B-2

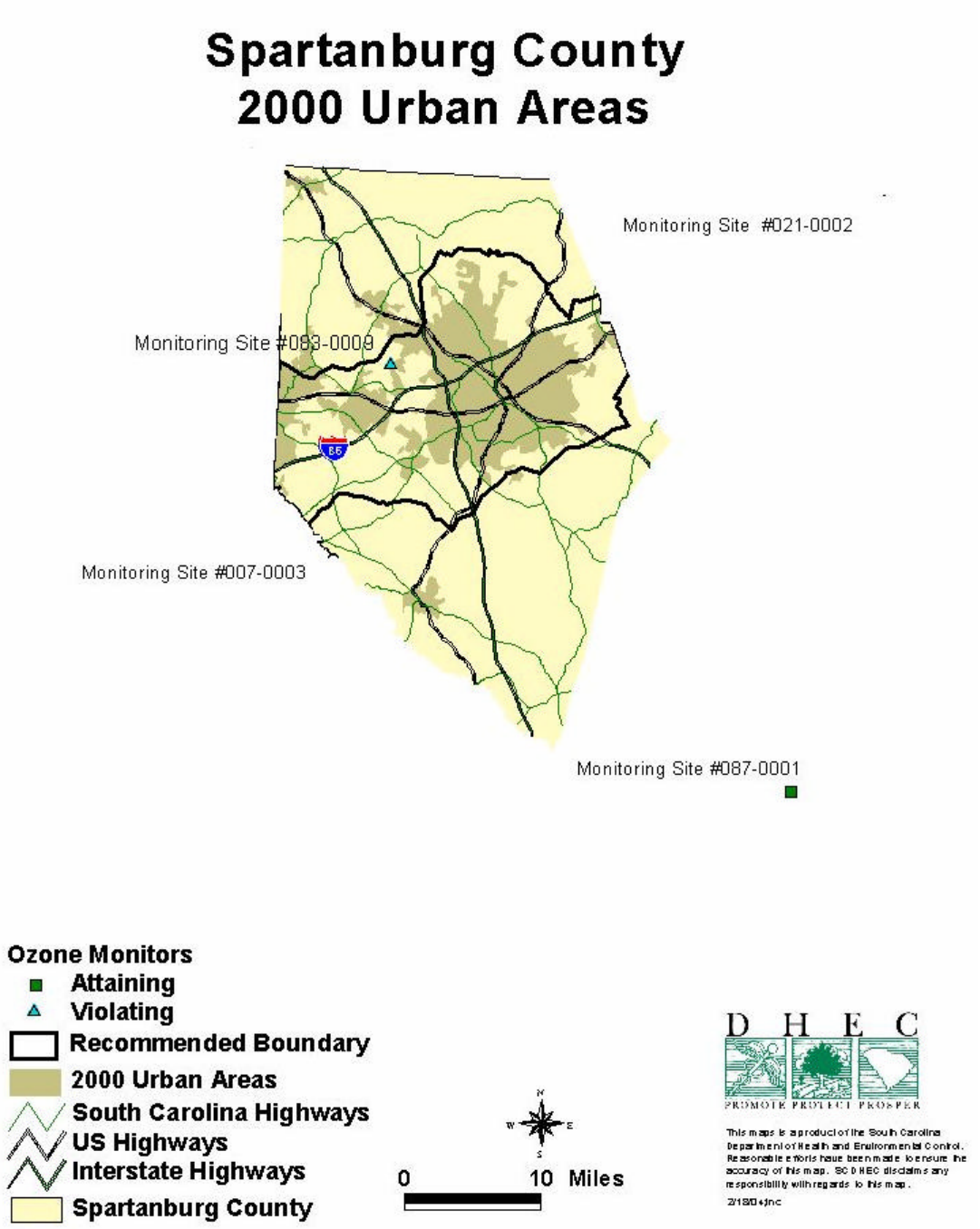


Table B-1 contains the population and land area data for Spartanburg County and the recommended area for the year 2000.

Table B-1 Population, Land Area, and Urban/Rural Population, 2000			
	Spartanburg County	**Recommended Area**	**% Captured by Recommended Area**
Population[2]	253,791	163,761	64.53%
Land Area (Square Miles)[1]	811	283.8	34.93%
Persons per Square Mile[1]	313.0	577.1	
Urban Population[3]	164,341		
% Urban Population[2]	64.8%		80-85%[4]
Rural Population[2]	89,450		
% Rural Population[2]	35.2%		

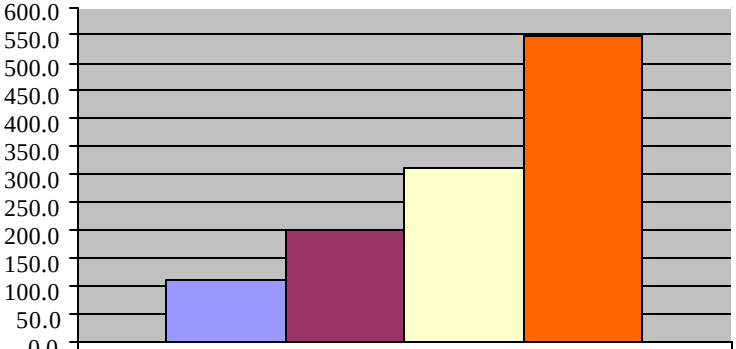
Table B-2 contains the population and land area for Anderson, Greenville, and Spartanburg Counties and the recommended areas for the year 2000. The recommended areas capture 83.04% of the counties' population and 54.32% of the counties' land area. Also, based on the population density and urban area maps for those counties, the recommended areas contain the densely populated areas and the vast majority of the populated areas.

Table B-2 Population, Land Area, and Urban/Rural Population, 2000							
	Population	**Land Area (Square Miles)**	**Persons per Square Mile**	**Urban Population**	**% Urban Population**	**Rural Population**	**% Rural Population**
Greenville County	379,616	790	480.5	315,095	83.00%	64,521	17.00%
Recommended Area	359,875	474.4	758.6				
% Captured by Recommended Area	94.80%	60.05%					
Spartanburg County	253,791	811	313	164,341	64.80%	89,450	35.20%
Recommended Area	163,761	283.8	577.1				
% Captured by Recommended Area	64.53%	34.93%					
Anderson County	165,740	718	230.8	96,680	58.30%	69,060	41.70%
Recommended Area	139,961	502.01	278.8				
% Captured by Recommended Area	84.45%	69.92%					
3 County Total	799,147	2,319	344.61				
3 Recommended Areas Total	663,597	1,259.71	526.79				
% captured by Total 3 recommended Areas	83.04%	54.32%					

[2] Data provided by US Census: 2000. The data for the recommended area was obtained from the SCDOT.
[3] Data provided by SC Office of Research and Statistics.
[4] Estimated.

Figures B-3 through B-5 show the population density, the population, and land area, respectively, distribution relative to the full county and the recommended area.

Figure B-3: Population Density, 2000
(Persons per Square Mile)

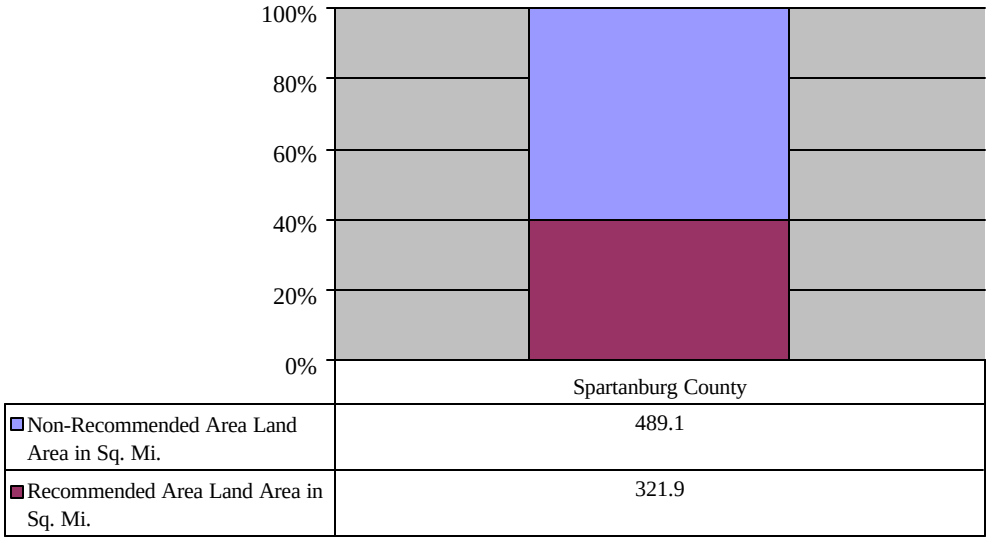


	Spartanburg County
County Rural Persons per Sq. Mi.	110.2
County Urban Persons per Sq. Mi.	202.8
Total County Persons per Sq. Mi.	313.0
Recommended Area Persons per Sq. Mi.	549.2

Figure B-4:
Population Distribution
Relative to Recommended Area Boundaries, 2000

	Spartanburg County
Outside Recommended Area	76.995
Inside Recommended Area	176.796

Figure B-5: Land Area Distribution in Spartanburg County According to Recommended Area Boundaries, 2000



Spartanburg County has various industry and businesses located throughout the county. Manufacturing is the county's largest employment sector as some 37,548 persons are employed at 385 manufacturing establishments throughout the county. The Spartanburg County portion of the recommended area contains 87.17% of the county's manufacturing employees and 88.31% of the county's manufacturing establishments. Retail trade is the county's second largest sector of employment as some 15,095 persons work at some 1,123 retail businesses throughout the county. Tables B-3 and B-4 contain the manufacturing and retail trade data for Spartanburg County and the Spartanburg Nonattainment Area.

Table B-3:
Manufacturing Patterns in, 2000[5]

Spartanburg County	Recommended Area	County	% in Recommended Area
Employees	32,730	37,548	87.17%
Establishments	340	385	88.31%

Table B-4:
Retail Trade Patterns, 2000[6]

	Number of Employees	Number of Establishments
Spartanburg County	15,095	1,123

[5] Data from Bureau of Air Quality "SC Company File1.xls," based on 2001.
[6] Data provided by US Census: 2000.

Given that the vast majority of the manufacturing establishments and employees in the county are located in the recommended area, that the county is predominantly urban, and that the recommended area contains the majority of the urbanized areas in the county, it is reasonably assumed that the majority of the retail trade employees and establishments in the county, as well as other businesses, are contained within the recommended area boundary.

Table B-5 shows both the number of employees and establishments for Spartanburg County according to the Census 2000 North American Industry Classification System (NAICS) database and is ranked in order according to the number of employees. The largest employment sector in Spartanburg County is manufacturing.[7] The second largest is Retail trade while the third is Health care and social assistance.

It should be noted that the data in Table B-5 differs from the data in the previous tables due to the source of the data.

Table B-5:
MSA Employees per Classification, NAICS, 2001

County	Industry Code Description	Number of Employees	Total Establishments	Rank based on Number of Employees from greatest to least
Spartanburg	Manufacturing	32,668	502	1
Spartanburg	Retail trade	14,083	1,089	2
Spartanburg	Health care and social assistance	13,745	457	3
Spartanburg	Admin, support, waste mgt, remediation services	12,036	327	4
Spartanburg	Accommodation & food services	8,809	491	5
Spartanburg	Construction	6,524	681	6
Spartanburg	Wholesale trade	6,121	475	7
Spartanburg	Other services (except public administration)	5,414	693	8
Spartanburg	Management of companies & enterprises	4,658	45	9
Spartanburg	Professional, scientific & technical services	3,349	410	10
Spartanburg	Transportation & warehousing	3,099	195	11
Spartanburg	Finance & insurance	2,657	391	12
Spartanburg	Educational services	2,043	44	13
Spartanburg	Information	1,326	74	14
Spartanburg	Auxiliaries (exc corporate, subsidiary & regional mgt)	971	19	15
Spartanburg	Real estate & rental & leasing	968	225	16
Spartanburg	Arts, entertainment & recreation	656	69	17
Spartanburg	Mining	132	4	18

[7] Data provided by US Census: 2000.

Table B-5: MSA Employees per Classification, NAICS, 2001				
County	**Industry Code Description**	**Number of Employees**	**Total Establishments**	**Rank based on Number of Employees from greatest to least**
Spartanburg	Forestry, fishing, hunting, and agriculture support	98	19	19
Spartanburg	Unclassified establishments	20-99	50	*
Spartanburg	Utilities	100-249	6	*
** The number of employees not available or the number of employees was reported as a range.*				

Table B-6 contains the number of MSA employees per classification for 2001, based on the NAICS Industry Code Description. For example, the Accommodation & Food Services classification in 2001 accounted for 7.58% of the employees in the MSA, and 24.77% of those employees worked in Spartanburg County while 45.95% of those employees worked in Greenville County. The largest employment in the MSA is in manufacturing (23.45%) and retail trade (11.66%); of those two classifications Spartanburg County employed 29.69% and 25.74%, respectively. In fact, in 2001 Spartanburg County generally contained the second most employees in each industry code category as seen in Table B-6.

Table B-6: MSA Employees per Classification, NAICS, 2001						
Industry Code Description	**% in MSA**	**Greenville County**	**Spartanburg County**	**Anderson County**	**Pickens County**	**Cherokee County**
Accommodation & food services	7.58%	45.95%	24.77%	14.90%	9.90%	4.47%
Admin, support, waste mgt, remediation services	9.42%	62.51%	27.23%	6.12%	2.77%	1.36%
Arts, entertainment & recreation	0.90%	61.12%	15.60%	12.44%	8.28%	2.57%
Auxiliaries (exc corporate, subsidiary & regional mgt)	0.86%	68.57%	23.95%	*	*	7.47%
Construction	9.38%	67.53%	14.82%	8.76%	5.15%	3.74%
Educational services	1.80%	59.91%	24.18%	5.79%	5.88%	4.24%
Finance & insurance	3.00%	64.43%	18.87%	9.71%	4.74%	2.25%
Forestry, fishing, hunting, and agriculture support	0.03%	*	63.64%	*	36.36%	*
Health care and social assistance	9.61%	42.90%	30.47%	17.26%	6.80%	2.57%
Information	1.83%	71.95%	15.43%	6.59%	4.61%	1.42%
Management of companies & enterprises	3.20%	61.85%	30.98%	1.41%	5.76%	*
Manufacturing	23.45%	37.62%	29.69%	17.14%	8.15%	7.41%
Mining	0.03%	*	100.00%	*	*	*
Other services (except public administration)	4.42%	48.31%	26.12%	13.79%	7.80%	3.98%

Table B-6: MSA Employees per Classification, NAICS, 2001						
Industry Code Description	**% in MSA**	**Greenville County**	**Spartanburg County**	**Anderson County**	**Pickens County**	**Cherokee County**
Professional, scientific & technical services	3.58%	68.45%	19.94%	6.91%	3.70%	1.01%
Real estate & rental & leasing	1.51%	69.36%	13.65%	6.11%	9.49%	1.38%
Retail trade	11.66%	45.42%	25.74%	15.70%	8.46%	4.67%
Transportation & warehousing	2.65%	61.86%	24.91%	6.91%	0.87%	5.45%
Unclassified establishments	0.04%	79.03%	*	16.67%	*	4.30%
Utilities	0.27%	58.75%	*	23.67%	11.17%	6.41%
Wholesale trade	4.78%	52.72%	27.30%	10.66%	5.23%	4.09%
** The number of employees not available or the number of employees was reported as a range.*						

Given that the vast majority of the manufacturing establishments and employees in the county are located in the recommended area, that the county is predominantly urban, and that the recommended area contains the majority of the urbanized areas in the county, it is reasonably assumed that the majority of the retail trade employees and establishments in the county, as well as other businesses, are contained within the recommended area boundary.

C. Monitoring Data Representing Ozone Concentrations in Local Areas and Larger Areas (urban or regional scale)

The North Spartanburg Fire Station monitor is surrounded by attaining monitors in Cherokee and Union Counties. The Department's Division of Air Quality Analysis, which is responsible for monitor siting, and data gathering, believes that while the monitor in Spartanburg County is in nonattainment, it is not representative of the entire county. The attaining monitor in Union County, which is sited in a rural portion of the state in close proximity to Spartanburg County, is better representative of southern, rural Spartanburg County and the monitor in Cherokee County is representative of northern Spartanburg County.

The Spartanburg County ozone monitoring station (North Spartanburg Fire Station 45-083-0009) is located off John Dodd Road, approximately 265 meters above sea level. The surrounding area of the monitoring site is residential. According to the South Carolina Department of Transportation (SCDOT), traffic counts for 1993 show five hundred (500) vehicles per day accessed the road. The site has been in operation since 1990 and measurement of ozone concentration runs mid-March through mid-November. The monitoring objective for this site is to measure the maximum ozone concentration.

The Cherokee County ozone monitoring station (Cowpens National Battle Ground 045-021-0002) is located off Highway 11, approximately 296 meters above sea level. The surrounding area of the monitoring site is forest. According to SC DOT, traffic counts for 1993 show one thousand (1,000) vehicles per day accessed the road. The site has been in operation since 1988 and measurement of ozone concentrations has run continuously since April of that year. The monitoring objective for this site is to measure concentrations for upwind background.

The Union County ozone monitoring station (Delta 045-087-0001) is located off Highway 121,

approximately113 meters above sea level. The surrounding area of the monitor is rural. According to SC DOT, traffic counts for 1993 show twenty-five (25) vehicles per day accessed the road. The site has been in operation since 1983, but the ozone monitoring station only runs mid-March through mid-November. The monitoring objective for this site is to measure ozone concentration for general background.

Table C-1 presents the 2001 through 2003 quality assured 8-hour ozone monitoring data for Spartanburg, Cherokee, and Union Counties. The design value is the annual fourth-highest daily maximum 8-hour ozone concentration, expressed in parts per million (ppm), averaged over three consecutive years. The 2003 design values for the Cowpens National Battleground, and Delta monitors indicate attainment with the 8-hour ozone standard.

Table C-1:
Spartanburg Area Ozone Monitoring Data

County	Site ID	Site Name	4th Maximum 8-Hour			Design Value
			2001	2002	2003	
Spartanburg	45-083-0009	North Spartanburg Fire Station	0.090	0.093	0.079	0.087
Cherokee	45-021-0002	Cowpens National Battleground	0.080	0.093	0.079	0.084
Union	45-087-0001	Delta	0.079	0.085	0.078	0.080

Table C-2 contains the previous three years daily maximum ozone concentration above 0.084 ppm. A period in the box indicates no exceedance occurred on that date.

Table C-2:
Spartanburg Area Ozone Values

Date of Exceedance	North Spartanburg Fire Station Exceeding Value	Cowpens National Battleground Exceeding Value	Delta Exceeding Value
05/04/2001	0.085	.	.
05/05/2001	0.090	.	.
05/30/2001	0.085	.	.
06/18/2001	0.088	.	.
06/20/2001	0.094	.	.
07/12/2001	0.093	.	.
07/16/2001	0.086	.	.
07/18/2001	0.090	.	.
08/14/2001	.	0.091	.
08/23/2001	0.089	.	.
08/25/2001	.	0.085	.
2001 Total Hits	**9**	**2**	**0**
05/24/2002	0.098	.	0.088
05/25/2002	0.085	.	.
06/03/2002	0.088	.	.
06/10/2002	0.088	0.091	.
06/11/2002	0.107	.	.

Table C-2: Spartanburg Area Ozone Values			
Date of Exceedance	**North Spartanburg Fire Station Exceeding Value**	**Cowpens National Battleground Exceeding Value**	**Delta Exceeding Value**
06/12/2002	.	0.086	.
06/13/2002	0.093	0.090	0.096
06/18/2002	0.085	.	.
06/19/2002	0.092	.	.
06/20/2002	0.086	.	.
06/29/2002	.	0.085	.
07/02/2002	.	0.089	.
07/03/2002	0.086	0.088	.
07/06/2002	0.088	0.085	.
07/08/2002	0.091	0.093	.
07/09/2002	0.087	.	.
07/17/2002	.	0.102	.
07/18/2002	.	0.085	.
07/31/2002	.	0.090	.
08/01/2002	0.085	.	.
08/02/2002	.	0.090	.
08/05/2002	.	0.096	.
08/09/2002	0.090	0.087	.
08/10/2002	0.093	.	.
08/11/2002	0.093	.	.
08/12/2002	0.100	.	.
08/21/2002	.	0.098	0.085
08/23/2002	.	0.085	0.086
09/05/2002	0.093	.	.
2002 Total Hits	**19**	**16**	**4**
06/26/2003	0.092	0.087	.
08/26/2003	0.094	.	.
08/27/2003	0.085	.	.
2003 Total Hits	**3**	**1**	**0**

D. Location of Emission Sources

Table D-1 lists the NO_x point sources that are in operation in Spartanburg County and the other four MSA counties based on the 1999 NO_x point source emissions inventory, which is routinely submitted to the National Emissions Inventory database. Spartanburg County has 57 NO_x point sources in operation and 48 of these point sources are located within the proposed nonattainment area. Facilities in Spartanburg County that are notated with an asterisk are located outside of the proposed boundary; all other facilities in Spartanburg County are located within the proposed boundary. Spartanburg County accounts for 44.02% of the total MSA NO_x point source emissions.

Table D - 1: MSA Point Source NO2 Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source - NO2 (Tons / Year)**
Spartanburg	Transcontinental Gas Pipe Line	2060-0179	NO2	3,881.99
Spartanburg	Kosa: Arteva Specialties	2060-0345	NO2	258.74
Spartanburg	Spartanburg Regional Medical Center	2060-0142	NO2	32.72
Spartanburg	Palmetto Landfill & Recycling Ctr	2060-0221	NO2	28.21
Spartanburg	BMW Manufacturing Corp	2060-0230	NO2	27.58
Spartanburg	Michelin: Spartanburg	2060-0065	NO2	23.95
Spartanburg	Springs Industries: Lyman	2060-0018	NO2	22.93
Spartanburg	Kohler Co: Plastics Plant	2060-0071	NO2	21.66
Spartanburg	Blackman Uhler Chemical	2060-0029	NO2	17.85
Spartanburg	Intelicoat Technologies	2060-0182	NO2	7.80
Spartanburg	Exopack LLC	2060-0075	NO2	7.76
Spartanburg	BASF: Spartanburg	2060-0068	NO2	7.51
Spartanburg	Bayer Corp: Wellford	2060-0055	NO2	7.41
Spartanburg	American Fast Print	2060-0026	NO2	7.10
Spartanburg	* National Starch & Chemical Company	2060-0085	NO2	7.07
Spartanburg	Milliken Chemical: Dewey	2060-0001	NO2	6.87
Spartanburg	Tietex International Ltd	2060-0147	NO2	6.63
Spartanburg	Saxon Fibers LLC	2060-0039	NO2	6.44
Spartanburg	* Sloan Construction: Pacolet	9900-0091	NO2	6.30
Spartanburg	Reeves Brothers: Fairforest	2060-0019	NO2	5.64
Spartanburg	Asphalt Contractors LLC	9900-0152	NO2	4.94
Spartanburg	Crown Cork & Seal: Spartanburg	2060-0077	NO2	4.61
Spartanburg	Sloan Construction: Lyman	9900-0115	NO2	4.60
Spartanburg	Milliken: Research	2060-0022	NO2	4.34
Spartanburg	* Inman Mills: Ramey Plant	2060-0271	NO2	3.87
Spartanburg	F & R Asphalt: Plant #1	9900-0090	NO2	3.34
Spartanburg	Reeves Brothers: Spartanburg	2060-0262	NO2	3.24
Spartanburg	* ISG Resources Inc	2060-0025	NO2	3.10
Spartanburg	Mary Black Memorial Hospital	2060-0121	NO2	3.10
Spartanburg	Inman Mills: Saybrook	2060-0042	NO2	2.71
Spartanburg	Goodyear: Spartanburg	2060-0035	NO2	2.33
Spartanburg	* Mohawk: Landrum	2060-0012	NO2	2.19
Spartanburg	L:ubrizol Form Control Additives	2060-0069	NO2	2.12
Spartanburg	Transmontaigne: Spartanburg-SE	2060-0134	NO2	2.04
Spartanburg	Steris-Isomedix Services	2060-0180	NO2	1.78
Spartanburg	Spartanburg Automotive Products	2060-0007	NO2	1.45
Spartanburg	Spartanburg Stainless Products	2060-0348	NO2	1.45
Spartanburg	Mount Vernon Mills: Arkwright	2060-0028	NO2	1.40
Spartanburg	Hoke Inc	2060-0175	NO2	1.30
Spartanburg	* Bommer Industries: Landrum	2060-0119	NO2	1.22

Table D-1: MSA Point Source NO2 Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-NO2 (Tons / Year)**
Spartanburg	Palmetto Vermiculite	2060-0181	NO2	1.22
Spartanburg	King Asphalt: # 4	9900-0352	NO2	1.21
Spartanburg	TNS Mills: Spartanburg	2060-0079	NO2	1.17
Spartanburg	Phelps Dodge	2060-0086	NO2	0.83
Spartanburg	Asphalt Associates	9900-0023	NO2	0.77
Spartanburg	MEMC Electronic Materials	2060-0070	NO2	0.59
Spartanburg	* Appalachian Engineered Hardwood Flooring	2060-0299	NO2	0.47
Spartanburg	Spartanburg Hospital Restoration Care	2060-0128	NO2	0.29
Spartanburg	Milliken: Cotton Blossom-Plant	2060-0288	NO2	0.24
Spartanburg	Donnelley, RR & Sons	2060-0081	NO2	0.13
Spartanburg	Engelhard: Duncan	2060-0266	NO2	0.10
Spartanburg	* Mack Molding Co	2060-0061	NO2	0.09
Spartanburg	* Piedmont Dielectrics	2060-0108	NO2	0.06
Spartanburg	Eastman Chemical Company	2060-0051	NO2	0.05
Spartanburg	Leigh Fibers Inc	2060-0084	NO2	0.04
Spartanburg	Piedmont Concrete: Duncan	9900-0282	NO2	0.02
Spartanburg	Metromont: Spartanburg I-85	2060-0038	NO2	0.01
	1999 Spartanburg Co. Total			**4,454.58**
	Emissions in Nonattainment Area-Total			**4,400.29**
	Emissions in Nonattainment Area-Percent			**98.8%**
Anderson	Duke Energy:Lee	0200-0004	NO2	3,556.57
Anderson	Owens Corning:Anderson	0200-0031	NO2	302.91
Anderson	Milliken:Pendleton	0200-0011	NO2	69.28
Anderson	Isola Laminate Systems Pendleton	0200-0058	NO2	44.74
Anderson	Michelin:Sandy Spring	0200-0018	NO2	22.49
Anderson	Vytech	0200-0050	NO2	17.64
Anderson	Milliken:Cushman	0200-0032	NO2	15.12
Anderson	Hexcel Schwebel Inc	0200-0036	NO2	11.33
Anderson	Anderson Medical Center	0200-0061	NO2	10.73
Anderson	Springs Industries:Wamsutta	0200-0014	NO2	9.83
Anderson	BASF:Anderson	0200-0005	NO2	9.71
Anderson	Sloan Construction:Anderson	9900-0113	NO2	9.27
Anderson	Blair Mills LP	0200-0034	NO2	6.69
Anderson	Pickens Construction Inc	9900-0041	NO2	5.96
Anderson	LaFrance:Mt Vernon	0200-0009	NO2	5.67
Anderson	Ashmore:#2	9900-0045	NO2	4.83
Anderson	Hydro Aluminum North America	0200-0127	NO2	4.65
Anderson	Maxxim Medical	0200-0033	NO2	4.28
Anderson	F&R Ashphalt:Plant #2	9900-0107	NO2	4.02

Table D - 1: MSA Point Source NO2 Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source - NO2 (Tons / Year)**
Anderson	Plastic Omnium	0200-0117	NO2	3.32
Anderson	Mount Vernon Mills:Williamston	0200-0045	NO2	2.91
Anderson	Apache Products:Anderson	0200-0048	NO2	2.12
Anderson	Transmontaigne:Belton-SE	0200-0056	NO2	2.02
Anderson	Chiquola Industrial Products:Chiquola	0200-0047	NO2	1.00
Anderson	Frigidaire:Anderson	0200-0084	NO2	1.00
Anderson	Ryobi Technologies Inc	0200-0043	NO2	0.59
Anderson	Goodman Conveyor	0200-0093	NO2	0.55
Anderson	Taylor Pallets Inc	0200-0153	NO2	0.40
Anderson	Griffin Thermal Products	0200-0147	NO2	0.18
Anderson	Fibertech Corp	0200-0095	NO2	0.13
Anderson	Metromont:Belton	0200-0102	NO2	0.10
Anderson	Clemson University:ARF	0200-0096	NO2	0.01
Anderson	Thomas Concrete:Anderson	9900-0332	NO2	0.01
	1999 Anderson Co. Total			**4,130.06**
Cherokee	Broad River Energy LLC	0600-0076	NO2	294.18
Cherokee	Milliken:Magnolia	0600-0007	NO2	244.06
Cherokee	Cherokee Cogeneration	0600-0060	NO2	90.61
Cherokee	Linpac Paper	0600-0044	NO2	57.28
Cherokee	Timken Co	0600-0009	NO2	27.69
Cherokee	Nestle Frozen Foods	0600-0033	NO2	25.88
Cherokee	SC Pipeline:Blacksburg	0600-0065	NO2	23.14
Cherokee	Boren Clay Products Blacksburg Plant	0600-0005	NO2	10.83
Cherokee	Industrial Minerals	0600-0039	NO2	3.34
Cherokee	Core Materials Corp	0600-0068	NO2	2.79
Cherokee	Hamrick Industries:Plant 5	0600-0036	NO2	1.74
Cherokee	Springfield LLC:Limestone	0600-0014	NO2	1.62
Cherokee	TNS Mills:Gaffney	0600-0054	NO2	1.55
Cherokee	Hamrick Mills:Hamrick Plant	0600-0004	NO2	1.43
Cherokee	Hamrick Mills:Musgrove	0600-0062	NO2	1.36
Cherokee	IFCO ICS-South Carolina Inc	0600-0055	NO2	0.94
Cherokee	Milliken Chemical:Cypress	0600-0040	NO2	0.20
	1999 Cherokee Co. Total			788.64
Greenville	Bob Jones University	1200-0245	NO2	58.54
Greenville	US Finishing	1200-0009	NO2	48.73
Greenville	Kemet:Mauldin	1200-0104	NO2	46.97
Greenville	GE:Greenville	1200-0094	NO2	46.95
Greenville	Michelin:Greenville	1200-0039	NO2	41.31

Table D - 1: MSA Point Source NO2 Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source - NO2 (Tons / Year)**
Greenville	Carustar:Taylors	1200-0013	NO2	32.86
Greenville	JPS:Slater	1200-0017	NO2	31.55
Greenville	Hitachi Electronic	1200-0203	NO2	30.69
Greenville	Mitsubishi Polyester Film LLC	1200-0026	NO2	29.72
Greenville	Milliken:Gayley Mill	1200-0029	NO2	27.25
Greenville	3M:Film Plant	1200-0073	NO2	24.19
Greenville	Cryovac-Simpsonville (Sealed Air Corp)	1200-0024	NO2	24.03
Greenville	Greenville Hospital System:Energy Plant	1200-0145	NO2	14.05
Greenville	Rexroth:Southchase SE Court	1200-0326	NO2	13.59
Greenville	Specialty Shearing	1200-0123	NO2	10.61
Greenville	Ashmore:#1	9900-0013	NO2	6.97
Greenville	Ethox Chemicals	1200-0171	NO2	6.82
Greenville	Nutricia: Greenville	1200--127	NO2	4.44
Greenville	Dan River:White Horse	1200-0196	NO2	4.16
Greenville	St Francis Hospital	1200-0139	NO2	4.01
Greenville	Columbia Farms:Greenville	1200-0232	NO2	3.20
Greenville	Kemet:Fountain Inn	1200-0147	NO2	3.19
Greenville	Delta Mills:Estes	1200-0016	NO2	3.07
Greenville	King Asphalt:# 3	9900-0283	NO2	2.82
Greenville	Crown Metro:Plant1	1200-0034	NO2	2.78
Greenville	Geschmay Corp	1200-0315	NO2	2.71
Greenville	Milliken:Judson Mill	1200-0028	NO2	2.52
Greenville	Blythe Construction:Plant 4	9900-0169	NO2	2.46
Greenville	Air Products:Piedmont	1200-0075	NO2	2.31
Greenville	Transflo Terminal SVCS:Greenville	1200-0337	NO2	2.22
Greenville	Greenville Finishing	1200-0217	NO2	2.20
Greenville	Reynolds Chemical:Greenville	1200-0247	NO2	2.08
Greenville	Lockheed Martin Aircraft Center	1200-0149	NO2	2.06
Greenville	Milliken:Enterprise Plant	1200-0060	NO2	1.98
Greenville	Scotts Sierra:Travelers Rest	1200-0033	NO2	1.49
Greenville	Para-Chem Southern Inc	1200-0099	NO2	1.34
Greenville	National Electric Carbon	1200-0121	NO2	1.16
Greenville	Kemet:Greenville	1200-0018	NO2	0.77
Greenville	Panagakos Asphalt Paving	9900-0362	NO2	0.77
Greenville	BellSouth:Greenville-College St	1200-0231	NO2	0.76
Greenville	Stevens Aviation:Donaldson Park	1200-0311	NO2	0.75
Greenville	Holly Oak Chemical	1200-0191	NO2	0.55
Greenville	American Woodworks	1200-0346	NO2	0.52
Greenville	Sherwin Williams:Fountain Inn	1200-0163	NO2	0.31
Greenville	Zupan & Smith:Simpsonville	9900-0158	NO2	0.26

Table D- 1: MSA Point Source NO2 Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source- NO2 (Tons / Year)**
Greenville	Cognis Corporation	1200-0067	NO2	0.20
Greenville	Engineered Products:Furman Hall Rd Plant	1200-0181	NO2	0.19
Greenville	Excalibur Tool:Poinsett	1200-0277	NO2	0.13
Greenville	RMAX	1200-0345	NO2	0.13
Greenville	Mita South Carolina	1200-0207	NO2	0.09
Greenville	Ernst Winter & Sons	1200-0179	NO2	0.03
Greenville	Gateway Mfg:Plant #2 - Greenville	1200-0317	NO2	0.01
Greenville	Metromont:Paris Mountain	1200-0150	NO2	0.01
	1999 Greenville Co. Total			**552.51**
Pickens	Clemson University	1880-0010	NO2	74.18
Pickens	BASF:Clemson	1880-0007	NO2	73.56
Pickens	Greenwood Mills:Liberty Plants	1880-0005	NO2	16.36
Pickens	Easley Combined Utilities:Utility Street	1880-0051	NO2	7.01
Pickens	Sloan Construction:Liberty	9900-0098	NO2	5.70
Pickens	Alice Manufacturing:Ellison	1880-0019	NO2	3.83
Pickens	Alice Manufacturing:Airal	1880-0018	NO2	3.67
Pickens	Alice Manufacturing:EllJean	1880-0020	NO2	3.63
Pickens	Alice Manufacturing:Foster	1880-0021	NO2	2.10
Pickens	Hollingsworth Saco Lowell	1880-0011	NO2	1.56
Pickens	One World Industries:Pickens	1880-0006	NO2	1.14
Pickens	McKechnie:Highway 93 Plant	1880-0052	NO2	0.65
Pickens	Flexiwall:208 Carolina Drive	1880-0040	NO2	0.02
	1999 Pickens Co. Total			**193.41**

Table D-2 lists the VOC point sources that are in operation in Spartanburg County and the other four MSA counties based on the 1999 VOC point source emissions inventory, which is routinely submitted to the National Emissions Inventory database. Spartanburg County has 64 VOC point sources in operation and 55 of these point sources are located within the proposed nonattainment area. Facilities in Spartanburg County that are notated with an asterisk are located outside of the proposed boundary; all other facilities in Spartanburg County are located within the proposed boundary. Spartanburg County accounts for 36.92% of the total MSA VOC point source emissions.

Table D-2: MSA Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons / Year)**
Spartanburg	Michelin: Spartanburg	2060-0065	VOC	537.00
Spartanburg	* National Starch & Chemical Company	2060-0085	VOC	231.43
Spartanburg	Goodyear: Spartanburg	2060-0035	VOC	224.44
Spartanburg	Kohler Co: Plastics Plant	2060-0071	VOC	204.41
Spartanburg	Exopack LLC	2060-0075	VOC	170.71
Spartanburg	Crown Cork & Seal: Spartanburg	2060-0077	VOC	152.00
Spartanburg	Transcontinental Gas Pipe Line	2060-0179	VOC	144.34
Spartanburg	Donnelley, RR & Sons	2060-0081	VOC	137.49
Spartanburg	Intelicoat Technologies	2060-0182	VOC	126.34
Spartanburg	American Fast Print	2060-0026	VOC	73.35
Spartanburg	Kosa: Arteva Specialties	2060-0345	VOC	72.81
Spartanburg	Mack Molding Co	2060-0061	VOC	62.75
Spartanburg	BMW Manufacturing Corp	2060-0230	VOC	58.05
Spartanburg	Reeves Brothers: Fairforest	2060-0019	VOC	49.99
Spartanburg	Motiva Enterprises LLC	2060-0097	VOC	46.91
Spartanburg	Springs Industries: Lyman	2060-0018	VOC	41.63
Spartanburg	Saxon Fibers LLC	2060-0039	VOC	39.34
Spartanburg	Transmontaigne: Spartanburg-SE	2060-0134	VOC	33.29
Spartanburg	Dot Packaging-Printpak	2060-0215	VOC	30.49
Spartanburg	Citgo: Spartanburg	2060-0101	VOC	26.60
Spartanburg	Transmontaigne: Spartanburg-PD	2060-0098	VOC	26.41
Spartanburg	Tietex International Ltd	2060-0147	VOC	25.72
Spartanburg	Phillips Pipeline: Spartanburg	2060-0056	VOC	24.81
Spartanburg	Lubrizol Form Control Additives	2060-0069	VOC	22.79
Spartanburg	Milliken Chemical: Dewey	2060-0001	VOC	19.31
Spartanburg	* Conocophillips Company	2060-0096	VOC	13.38
Spartanburg	Crown Central Petroleum	2060-0094	VOC	12.65
Spartanburg	Michelin: Duncan	2060-0183	VOC	10.41
Spartanburg	Palmetto Landfill & Recycling Ctr	2060-0221	VOC	9.86
Spartanburg	Color Converting Ind	2060-0199	VOC	7.93
Spartanburg	Bayer Corp: Wellford	2060-0055	VOC	7.35
Spartanburg	* Bommer Industries: Landrum	2060-0119	VOC	5.91
Spartanburg	Blackman Uhler Chemical	2060-0029	VOC	3.72
Spartanburg	* Piedmont Dielectrics	2060-0108	VOC	3.02
Spartanburg	Steris-Isomedix Services	2060-0180	VOC	2.68
Spartanburg	Mohawk: Landrum	2060-0012	VOC	2.20
Spartanburg	Cooper Standard Automotive	2060-0088	VOC	2.02
Spartanburg	* Inman Mills: Ramey Plant	2060-0271	VOC	2.01
Spartanburg	Spartanburg Regional Medical Center	2060-0142	VOC	2.00

Table D-2: MSA Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons / Year)**
Spartanburg	King Asphalt: # 4 - New	9900-0352	VOC	1.85
Spartanburg	BASF: Spartanburg	2060-0068	VOC	1.35
Spartanburg	Milliken: Cotton Blossom-Plant	2060-0288	VOC	1.26
Spartanburg	TNS Mills: Spartanburg	2060-0079	VOC	0.94
Spartanburg	Engelhard: Duncan	2060-0266	VOC	0.92
Spartanburg	Inman Mills: Saybrook	2060-0042	VOC	0.64
Spartanburg	Spartanburg Stainless Products	2060-0348	VOC	0.59
Spartanburg	MEMC Electronic Materials	2060-0070	VOC	0.45
Spartanburg	Asphalt Associates	9900-0023	VOC	0.43
Spartanburg	Reeves Brothers: Spartanburg	2060-0262	VOC	0.29
Spartanburg	* ISG Resources Inc	2060-0025	VOC	0.17
Spartanburg	Milliken: Research	2060-0022	VOC	0.17
Spartanburg	Mary Black Memorial Hospital	2060-0121	VOC	0.13
Spartanburg	* Appalachian Engineered Hardwood Flooring	2060-0299	VOC	0.11
Spartanburg	Mount Vernon Mills: Arkwright	2060-0028	VOC	0.08
Spartanburg	Spartanburg Automotive Products	2060-0007	VOC	0.08
Spartanburg	* Palmetto Vermiculite	2060-0181	VOC	0.07
Spartanburg	Phelps Dodge	2060-0086	VOC	0.05
Spartanburg	Hoke Inc	2060-0175	VOC	0.03
Spartanburg	* Sloan Construction: Pacolet	9900-0091	VOC	0.03
Spartanburg	Asphalt Contractors LLC	9900-0152	VOC	0.02
Spartanburg	F & R Asphalt: Plant #1	9900-0090	VOC	0.02
Spartanburg	Sloan Construction: Lyman	9900-0115	VOC	0.02
Spartanburg	Spartanburg Hospital Restoration Care	2060-0128	VOC	0.02
Spartanburg	Eastman Chemical Company	2060-0051	VOC	0.01
	1999 Spartanburg Co. Total			**2,677.28**
	Emissions in Nonattainment Area-Total			**2,418.95**
	Emissions in Nonattainment Area-Percent			**90.4%**
Anderson	Plastic Omnium	0200-0117	VOC	216.89
Anderson	Owens Corning:Anderson	0200-0031	VOC	175.05
Anderson	Vytech	0200-0050	VOC	136.83
Anderson	Michelin:Sandy Spring	0200-0018	VOC	124.50
Anderson	Isola Laminate Systems Pendleton	0200-0058	VOC	113.32
Anderson	Hydro Aluminum North America	0200-0127	VOC	81.37
Anderson	BASF:Anderson	0200-0005	VOC	76.05
Anderson	Milliken:Pendleton	0200-0011	VOC	58.14
Anderson	Apache Products:Anderson	0200-0048	VOC	50.75
Anderson	Goodman Conveyor	0200-0093	VOC	46.95
Anderson	Hexcel Schwebel Inc	0200-0036	VOC	42.89

Table D-2: MSA Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons / Year)**
Anderson	Transmontaigne:Belton-PD	0200-0057	VOC	40.93
Anderson	Marathon Ashland:Belton	0200-0052	VOC	33.16
Anderson	Ryobi Technologies Inc	0200-0043	VOC	25.86
Anderson	Transmontaigne:Belton-SE	0200-0056	VOC	18.51
Anderson	Duke Energy:Lee	0200-0004	VOC	14.40
Anderson	Maxxim Medical	0200-0033	VOC	13.87
Anderson	Springs Industries:Wamsutta	0200-0014	VOC	9.20
Anderson	Fibertech Corp	0200-0095	VOC	7.58
Anderson	Griffin Thermal Products	0200-0147	VOC	6.96
Anderson	Rockwell Automation/Dodge	0200-0119	VOC	4.56
Anderson	Blair Mills LP	0200-0034	VOC	3.37
Anderson	Clemson University:ARF	0200-0096	VOC	3.04
Anderson	Milliken:Cushman	0200-0032	VOC	2.73
Anderson	Darby Metal Works	0200-0129	VOC	2.04
Anderson	Frigidaire:Anderson	0200-0084	VOC	1.05
Anderson	Pickens Construction Inc	9900-0041	VOC	0.46
Anderson	Chiquola Industrial Products:Chiquola	0200-0047	VOC	0.33
Anderson	Anderson Medical Center	0200-0061	VOC	0.29
Anderson	Ashmore:#2	9900-0045	VOC	0.13
Anderson	LaFrance:Mt Vernon	0200-0009	VOC	0.11
Anderson	Mount Vernon Mills:Williamston	0200-0045	VOC	0.05
Anderson	Sloan Construction:Anderson	9900-0113	VOC	0.04
Anderson	F&R Asphalt:Plant #2	9900-0107	VOC	0.02
	1999 Anderson Co. Total			**1,311.43**
Cherokee	Alcoa Building Products	0600-0016	VOC	145.00
Cherokee	Milliken:Magnolia	0600-0007	VOC	133.60
Cherokee	IFCO ICS-South Caorlina Inc	0600-0055	VOC	55.00
Cherokee	Milliken Chemical:Cypress	0600-0040	VOC	31.69
Cherokee	Hamrick Industries:Plant 5	0600-0036	VOC	13.31
Cherokee	Core Materials Corp	0600-0068	VOC	9.91
Cherokee	Cherokee Cogeneration	0600-0060	VOC	5.48
Cherokee	Sanders Bros Metals	0600-0052	VOC	5.07
Cherokee	Linpac Paper	0600-0044	VOC	4.33
Cherokee	Springfield LLC:Limestone	0600-0014	VOC	3.03
Cherokee	TNS Mills:Gaffney	0600-0054	VOC	1.90
Cherokee	Timken Co	0600-0009	VOC	1.23
Cherokee	Freightliner Custom Chassis	0600-0049	VOC	0.79
Cherokee	Boren Clay Products-Blacksburg Plant	0600-0005	VOC	0.74
Cherokee	Hamrick Mills:Musgrove	0600-0062	VOC	0.73

Table D-2: MSA Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons / Year)**
Cherokee	Broad River Energy LLC	0600-0076	VOC	0.71
Cherokee	Hamrick Mills:Hamrick Plant	0600-0004	VOC	0.66
Cherokee	Nestle Frozen Foods	0600-0033	VOC	0.45
Cherokee	SC Pipeline:Blacksburg	0600-0065	VOC	0.15
Cherokee	Industrial Minerals	0600-0039	VOC	0.03
	1999 Cherokee Co. Total			**413.81**
Greenville	3M:Tape Plant	1200-0148	VOC	641.15
Greenville	Michelin:Greenville	1200-0039	VOC	423.60
Greenville	Cryovac-Simpsonville (Sealed Air Corp)	1200-0024	VOC	407.78
Greenville	Mitsubishi Polyester Film LLC	1200-0026	VOC	224.22
Greenville	US Finishing	1200-0009	VOC	107.03
Greenville	Hitachi Electronic	1200-0203	VOC	97.74
Greenville	Engineered Products:Furman Hall Rd Plant	1200-0181	VOC	76.92
Greenville	Nutricia:Greenville	1200-0127	VOC	66.37
Greenville	3M:Film Plant	1200-0073	VOC	55.34
Greenville	Kemet:Mauldin	1200-0104	VOC	53.57
Greenville	Kemet:Fountain Inn	1200-0147	VOC	46.19
Greenville	National Electrick Carbon	1200-0121	VOC	40.97
Greenville	Milliken:Gayley Mill	1200-0029	VOC	40.35
Greenville	Bob Jones University	1200-0245	VOC	34.41
Greenville	SC Steel Corp	1200-0362	VOC	32.60
Greenville	Gateway Mfg:Plant #2-Greenville	1200-0317	VOC	26.65
Greenville	JPS:Slater	1200-0017	VOC	26.28
Greenville	Reynolds Chemical:Greenville	1200-0247	VOC	25.23
Greenville	Kemet:Greenville	1200-0018	VOC	22.57
Greenville	GE:Greenville	1200-0094	VOC	22.02
Greenville	Para-Chem Southern Inc	1200-0099	VOC	21.71
Greenville	Lockheed Martin Aircraft Center	1200-0149	VOC	21.01
Greenville	Stevens Aviation:Donaldson Park	1200-0311	VOC	20.07
Greenville	Messer Industries	1200-0269	VOC	19.53
Greenville	Rudco Products Inc	1200-0194	VOC	17.93
Greenville	Milliken:Enterprise Plant	1200-0060	VOC	15.76
Greenville	Excalibur Tool:Poinsett	1200-0277	VOC	14.41
Greenville	Sherwin Williams:Fountain Inn	1200-0163	VOC	12.83
Greenville	RMAX	1200-0345	VOC	9.55
Greenville	Parthenon Marble	1200-0260	VOC	7.12
Greenville	Cognis Corporation	1200-0067	VOC	7.11
Greenville	American Woodworks	1200-0346	VOC	6.94
Greenville	Crown Metro:Plant #1	1200-0034	VOC	6.03

Table D-2: MSA Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons / Year)**
Greenville	Delta Mills:Estes	1200-0016	VOC	5.74
Greenville	St Francis Hospital	1200-0139	VOC	5.55
Greenville	Woven Electronics	1200-0252	VOC	5.16
Greenville	King Asphalt:# 3	9900-0283	VOC	4.50
Greenville	Dan River:White Horse	1200-0196	VOC	4.12
Greenville	Milliken:Judson Mill	1200-0028	VOC	4.09
Greenville	Air Products:Piedmont	1200-0075	VOC	4.08
Greenville	Greenville Finishing	1200-0217	VOC	2.20
Greenville	National Cabinet Lock	1200-0107	VOC	2.01
Greenville	Geschmay Corp	1200-0315	VOC	1.97
Greenville	Greenville News	1200-0226	VOC	1.35
Greenville	Panagakos Asphalt Paving	9900-0362	VOC	1.19
Greenville	Thermo Kinetics	1200-0313	VOC	1.01
Greenville	Standard Motor Products Inc	1200-0132	VOC	0.88
Greenville	Rexroth:Southchase Court	1200-0326	VOC	0.87
Greenville	Greenville Hospital System:Energy Plant	1200-0145	VOC	0.83
Greenville	Carustar:Taylors	1200-0013	VOC	0.65
Greenville	Ethox Chemicals	1200-0171	VOC	0.52
Greenville	Specialty Shearing	1200-0123	VOC	0.27
Greenville	Ashmore:#1	9900-0013	VOC	0.13
Greenville	Transflo Terminal SVCS:Greenville	1200-0337	VOC	0.12
Greenville	Columbia Farms:Greenville	1200-0232	VOC	0.06
Greenville	Scotts Sierra:Travelers Rest	1200-0033	VOC	0.06
Greenville	Blythe Construction:Plant 4	9900-0169	VOC	0.05
Greenville	BellSouth:Greenville-College St	1200-0231	VOC	0.04
Greenville	Holly Oak Chemical	1200-0191	VOC	0.03
Greenville	Mita South Carolina	1200-0207	VOC	0.01
Greenville	Zupan & Smith:Simpsonville	9900-0158	VOC	0.01
	1999 Greenville Co. Total			**2,698.49**
Pickens	McKechnie:Hwy 93 Plant	1880-0052	VOC	42.38
Pickens	BASF:Clemson	1880-0007	VOC	39.87
Pickens	One World Industries:Pickens	1880-0006	VOC	22.71
Pickens	Flexiwall:208 Carolina Drive	1880-0040	VOC	18.58
Pickens	Greenwood Mills:Liberty Plants	1880-0005	VOC	14.12
Pickens	Hollingsworth Saco Lowell	1880-0011	VOC	3.10
Pickens	Alice Manufacturing:Elljean	1880-0020	VOC	2.81
Pickens	Alice Manufacturing:Ellison	1880-0019	VOC	2.43
Pickens	Alice Manufacturing:Arial	1880-0018	VOC	2.04
Pickens	Alice Manufacturing:Foster	1880-0021	VOC	2.02

Table D-2: MSA Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons / Year)**
Pickens	Clemson University	1880-0010	VOC	0.61
Pickens	Easley Combined Utilities:Utility Street	1880-0051	VOC	0.18
Pickens	Sloan Construction:Liberty	9900-0098	VOC	0.03
	1999 Pickens Co. Total			**150.88**

Table D-3 lists the NO_x on-road emissions for Spartanburg County and Table D-4 lists the VOC on-road emissions for Spartanburg County.

Table D-3: Spartanburg County On-road NO_x Emissions			
County	**Tier 1**	**Tier 2**	**Highway NO_x (Tons / Year)**
Spartanburg	11-Highway Vehicles	01-Light-Duty Gas Vehicles & Motorcycles	4,150.00
Spartanburg	11-Highway Vehicles	02-Light-Duty Gas Trucks	2,287.00
Spartanburg	11-Highway Vehicles	03-Heavy-Duty Gas Vehicles	604.00
Spartanburg	11-Highway Vehicles	04-Diesels	5,427.00
	1999 Spartanburg Co. Total		**12,468.00**

Table D-4: Spartanburg County On-road VOC Emissions			
County	**Tier 1**	**Tier 2**	**Highway VOC (Tons / Year)**
Spartanburg	11-Highway Vehicles	01-Light-Duty Gas Vehicles & Motorcycles	4,425.00
Spartanburg	11-Highway Vehicles	02-Light-Duty Gas Trucks	2,516.00
Spartanburg	11-Highway Vehicles	03-Heavy-Duty Gas Vehicles	595.00
Spartanburg	11-Highway Vehicles	04-Diesels	340.00
	1999 Spartanburg Co. Total		**7,876.00**

E. Traffic and Commuting Patterns

Spartanburg County retains 88.64% of Spartanburg County residents that work within the county, and 22.08% of the entire MSA commuter flow is contained within Spartanburg County.

Estimates of the Daily Vehicle Miles Traveled (DVMT) were obtained from the South Carolina Department of Transportation (SCDOT). SCDOT determines current DVMT by multiplying traffic volume (through traffic counts) and lane miles (determined by the Highway Performance Monitoring System) for each particular area. The South Carolina Department of Public Safety, Division of Motor

Vehicles, provided motor vehicle registration data. All other data in this section was obtained from the US Census Bureau. All data is based on the year 2000.

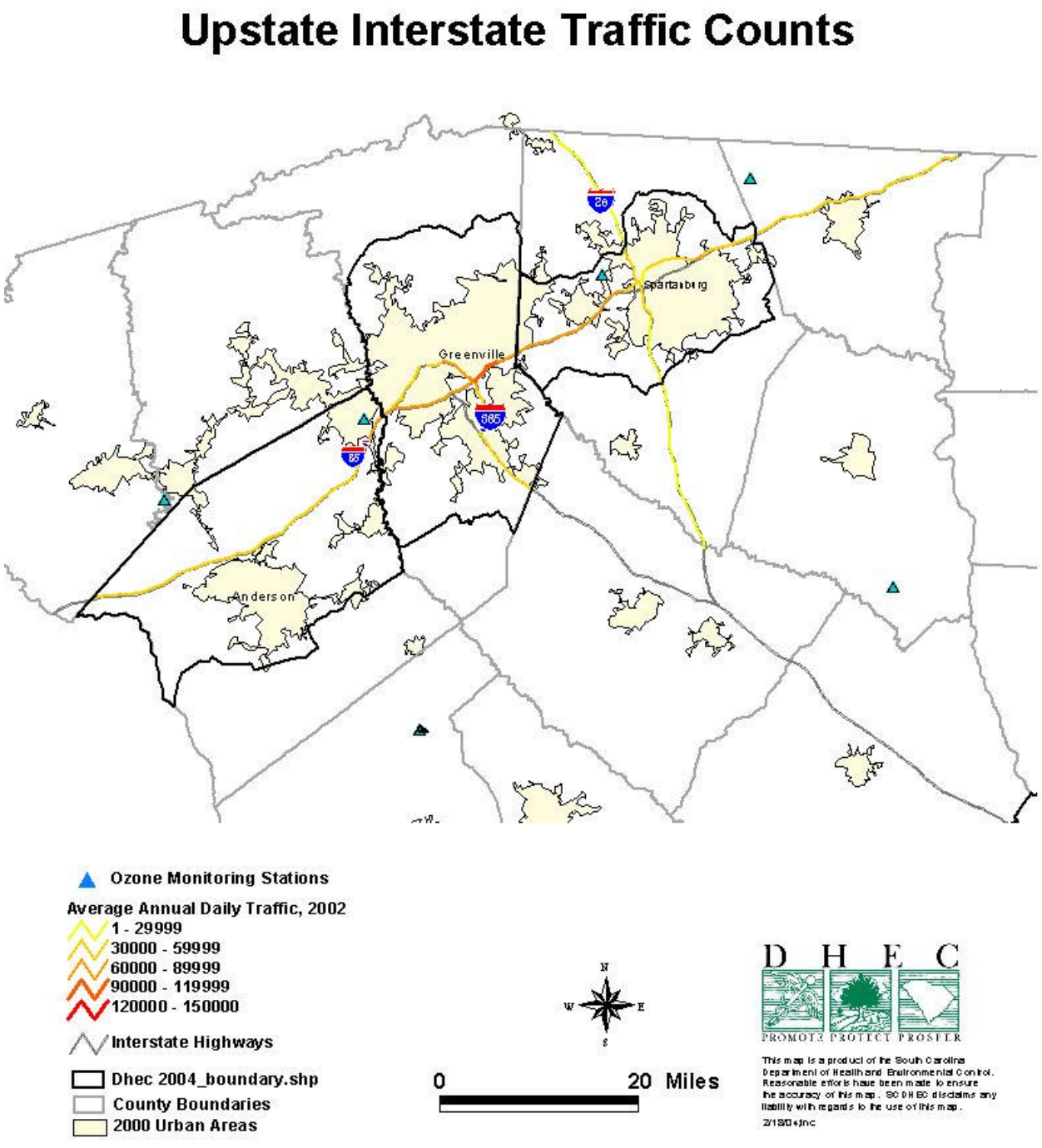
Table E-1 shows the 2000 and 2025 DVMT data for the Greenville-Spartanburg-Anderson MSA.

Table E-1:
DVMT for Greenville-Spartanburg-Anderson MSA

County	2000 DVMT	2025 DVMT	DVMT Change (2000-2025)
Anderson	5,207,194	8,687,689	3,480,495
Cherokee	2,063,088	3,303,158	1,240,070
Greenville	9,421,709	14,705,492	5,283,783
Pickens	2,224,743	3,613,182	1,388,439
Spartanburg	8,041,582	13,086,740	5,045,158
Statewide	**123,805,748**	**199,789,677**	**75,983,929**

Figure E-1 below, shows the Interstates that are located within the Greenville-Spartanburg-Anderson MSA. There two interstates (I-85 and I-385). I-85 is the major corridor of travel between Spartanburg and Greenville, SC, and I-385 is the interstate spur between I-26 and Greenville. This figure also shows the 2000 traffic counts for the interstates. The highest traffic occurs near the intersection of I-85 and I-385 and also in Greenville County. The further away from Greenville County the road section is located, the lower the traffic count.

Figure E-1:


Upstate Interstate Traffic Counts
26
Spartanburg
Greenville
385
85
Anderson
Ozone Monitoring Stations
Average Annual Daily Traffic, 2002
1 - 29999
30000 - 59999
60000 - 89999
90000 - 119999
120000 - 150000
Interstate Highways
Dhec 2004_boundary.shp
County Boundaries
2000 Urban Areas
N
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0
20 Miles
D H E C
PROMOTE PROTECT PROSPER
This map is a product of the South Carolina Department of Health and Environmental Control. Reasonable efforts have been made to ensure the accuracy of this map. SCDHEC disclaims any liability with regards to the use of this map.
2/18/04 jnc

Table E-2 shows the DVMT for each classification of road for 2000, 2007, 2012 and 2025 for the Greenville-Spartanburg-Anderson MSA.

Table E-2: DVMT Data for the Greenville-Spartanburg-Anderson MSA				
	2000	**Projected 2007**	**Projected 2012**	**Projected 2025**
Anderson County				
Rural Interstate (01)	1,600,864	1,968,809	2,231,627	2,914,954
Rural Principal Arterial (02)	292,648	341,872	377,032	468,448
Rural Minor Arterial (03)	706,739	825,614	910,524	1,131,293
Rural Major Collector (04)	1,030,719	1,204,088	1,327,924	1,649,895
Rural Minor Collector (05)	70,663	82,549	91,039	113,113
Rural Local (09)	306,263	357,777	394,573	490,242
Rural Total	*4,007,896*	*4,780,709*	*5,332,719*	*6,767,945*
Urban Interstate (11)	-	-	-	-
Urban Freeway/Expressway (12)	-	-	-	-
Urban Principal Arterial (13)	607,982	710,246	783,292	973,211
Urban Minor Arterial (14)	320,296	374,170	412,652	512,704
Urban Collector (15)	193,409	225,941	249,178	309,595
Urban Local (18)	77,612	90,666	99,991	124,235
Urban Total	*1,199,298*	*1,401,023*	*1,545,113*	*1,919,745*
Grand Total DVMT	**5,207,194**	**6,181,733**	**6,877,832**	**8,687,689**
Cherokee County				
Rural Interstate (01)	1,022,864	1,248,380	1,409,462	1,828,277
Rural Principal Arterial (02)	44,911	50,318	53,215	63,677
Rural Minor Arterial (03)	235,062	263,364	278,527	333,281
Rural Major Collector (04)	315,400	353,375	373,721	447,189
Rural Minor Collector (05)	31,875	35,713	37,769	45,194
Rural Local (09)	187,725	210,327	222,437	266,164
Rural Total	*1,837,837*	*2,161,478*	*2,375,132*	*2,983,782*
Urban Interstate (11)	-	-	-	-
Urban Freeway/Expressway (12)	-	-	-	-
Urban Principal Arterial (13)	-	-	-	-
Urban Minor Arterial (14)	97,669	109,429	115,729	138,479
Urban Collector (15)	67,539	75,671	80,028	95,760
Urban Local (18)	60,043	67,272	71,145	85,131
Urban Total	*225,251*	*252,372*	*266,902*	*319,371*
Grand Total DVMT	**2,063,088**	**2,413,849**	**2,642,034**	**3,303,152**
Greenville County				
Rural Interstate (01)	605,987	755,682	862,607	1,140,612
Rural Principal Arterial (02)	470,166	534,064	568,524	691,096
Rural Minor Arterial (03)	543,348	617,191	657,015	798,665

Table E-2: DVMT Data for the Greenville -Spartanburg-Anderson MSA				
	2000	**Projected 2007**	**Projected 2012**	**Projected 2025**
Rural Major Collector (04)	930,573	1,057,042	1,125,247	1,367,847
Rural Minor Collector (05)	50,942	57,865	61,599	74,880
Rural Local (09)	309,140	351,154	373,812	454,404
Rural Total	*2,910,155*	*3,372,998*	*3,648,804*	*4,527,504*
Urban Interstate (11)	1,604,349	1,985,303	2,257,413	2,964,899
Urban Freeway/Expressway (12)	46,581	52,912	56,326	68,469
Urban Principal Arterial (13)	1,743,223	1,980,136	2,107,902	2,562,360
Urban Minor Arterial (14)	1,797,160	2,041,403	2,173,123	2,641,641
Urban Collector (15)	1,036,576	1,177,451	1,253,426	1,523,660
Urban Local (18)	283,665	322,217	343,008	416,959
Urban Total	*6,511,554*	*7,559,421*	*8,191,197*	*10,177,988*
Grand Total DVMT	**9,421,709**	**10,932,419**	**11,840,001**	**14,705,492**
Pickens County				
Rural Interstate (01)	-	-	-	-
Rural Principal Arterial (02)	303,647	358,369	388,825	493,150
Rural Minor Arterial (03)	449,827	530,892	576,011	730,559
Rural Major Collector (04)	465,085	548,900	595,549	755,340
Rural Minor Collector (05)	46,606	55,006	59,680	75,693
Rural Local (09)	214,650	253,333	274,863	348,610
Rural Total	*1,479,815*	*1,746,499*	*1,894,928*	*2,403,353*
Urban Interstate (11)	-	-	-	-
Urban Freeway/Expressway (12)	44,814	52,890	57,385	72,782
Urban Principal Arterial (13)	286,329	337,930	366,649	465,024
Urban Minor Arterial (14)	255,655	301,728	327,370	415,207
Urban Collector (15)	106,750	125,988	136,695	173,371
Urban Local (18)	51,380	60,639	65,793	83,445
Urban Total	*744,928*	*879,174*	*953,892*	*1,209,829*
Grand Total DVMT	**2,224,743**	**2,625,674**	**2,848,820**	**3,613,182**
Spartanburg County				
Rural Interstate (01)	2,395,210	3,044,958	3,509,064	4,715,740
Rural Principal Arterial (02)	137,290	152,821	160,853	188,254
Rural Minor Arterial (03)	984,884	1,096,301	1,153,919	1,350,484
Rural Major Collector (04)	1,194,093	1,329,176	1,399,034	1,637,353
Rural Minor Collector (05)	177,077	197,109	207,468	242,809
Rural Local (09)	264,722	294,669	310,155	362,989
Rural Total	*5,153,275*	*6,115,034*	*6,740,494*	*8,497,628*
Urban Interstate (11)	524,281	754,792	919,442	1,347,534
Urban Freeway/Expressway (12)	162,742	181,152	190,673	223,154
Urban Principal Arterial (13)	871,282	969,847	1,020,819	1,194,711
Urban Minor Arterial (14)	657,734	732,141	770,620	901,892
Urban Collector (15)	565,477	629,448	662,530	775,389

Table E-2: DVMT Data for the Greenville-Spartanburg-Anderson MSA				
	2000	**Projected 2007**	**Projected 2012**	**Projected 2025**
Urban Local (18)	106,791	118,872	125,119	146,433
Urban Total	*2,888,307*	*3,386,253*	*3,689,204*	*4,589,111*
Grand Total DVMT	**8,041,582**	**9,501,287**	**10,429,698**	**13,086,740**
Statewide				
Rural Interstate (01)	23,146,274	28,309,862	31,998,139	41,587,660
Rural Principal Arterial (02)	12,905,947	14,916,454	16,175,569	20,131,432
Rural Minor Arterial (03)	17,145,253	19,735,411	21,341,306	26,491,890
Rural Major Collector (04)	15,569,699	17,893,702	19,330,816	23,911,717
Rural Minor Collector (05)	2,061,800	2,372,015	2,565,610	3,178,012
Rural Local (09)	7,634,920	8,763,106	9,471,020	11,703,697
Rural Total	*78,463,892*	*91,990,550*	*100,882,461*	*127,004,409*
Urban Interstate (11)	9,470,591	12,063,075	13,914,850	18,729,464
Urban Freeway/Expressway (12)	2,039,115	2,311,200	2,483,836	2,991,347
Urban Principal Arterial (13)	14,308,881	16,393,798	17,631,864	21,720,541
Urban Minor Arterial (14)	11,057,992	12,630,175	13,565,185	16,623,891
Urban Collector (15)	5,611,026	6,401,102	6,857,898	8,403,840
Urban Local (18)	2,854,251	3,267,188	3,511,242	4,316,185
Urban Total	*45,341,855*	*53,066,538*	*57,964,874*	*72,785,268*
Grand Total DVMT	**123,805,748**	**145,057,088**	**158,847,335**	**199,789,677**

Tables E-3[8] and E-4 present the 2000 worker flow data from each of the counties and the percent commute for the MSA. Some counties that are listed on this table are not being considered for boundary recommendations, and are being included on this chart to account for all workers in each county. The above tables show that there is very little commuting outside of the MSA within the state of South Carolina.

Table E-3: Where People Living in the Greenville-Spartanburg-Anderson MSA Work						
County Worked In	**County of Residence**					
	Anderson	**Cherokee**	**Greenville**	**Pickens**	**Spartanburg**	**Grand Total**
Abbeville	591	0	47	26	0	664
Aiken	0	6	54	39	20	119
Anderson	52,133	31	3,367	3,648	480	59,659
Barnwell	8	0	7	0	0	15
Beaufort	0	0	33	9	16	58
Berkeley	35	30	0	9	15	89
Charleston	59	52	104	100	70	385
Cherokee	61	16,052	203	63	2,029	18,408

8 Data provided from US Census: 2000

Table E-3: Where People Living in the Greenville -Spartanburg-Anderson MSA Work						
County Worked In	**County of Residence**					
	Anderson	**Cherokee**	**Greenville**	**Pickens**	**Spartanburg**	**Grand Total**
Chester	5	17	11	0	27	60
Colleton	0	0	12	8	25	45
Darlington	0	4	6	11	8	29
Dorchester	0	20	29	11	0	60
Edgefield	0	0	0	3	0	3
Fairfield	0	0	0	0	33	33
Florence	0	8	27	0	0	35
Georgetown	8	0	0	0	8	16
Greenville	13,766	431	161,906	15,095	14,586	205,784
Greenwood	520	18	381	64	226	1,209
Hampton	7	0	0	8	0	15
Horry	42	0	14	5	31	92
Kershaw	0	6	0	7	0	13
Lancaster	24	25	36	6	20	111
Laurens	268	26	1,613	112	703	2,722
Lee	0	0	18	0	0	18
Lexington	40	12	127	21	23	223
Marion	0	0	14	6	0	20
McCormick	2	0	6	0	0	8
Newberry	12	0	58	20	22	112
Oconee	1,274	11	396	2,331	112	4,124
Orangeburg	3	0	0	0	6	9
Pickens	4,300	16	2,566	28,951	198	36,031
Richland	88	8	193	110	71	470
Saluda	3	0	6	0	0	9
Spartanburg	1,264	3,937	11,205	784	95,496	112,686
Sumter	0	0	22	0	7	29
Union	40	141	130	37	522	870
York	38	274	73	33	130	548
Grand Total	74,591	21,125	182,664	51,517	114,884	444,781

Table E-4: Where People Living in the Greenville -Spartanburg-Anderson MSA Work (Percentage Table)						
County Worked In	**County of Residence**					
	Anderson	**Cherokee**	**Greenville**	**Pickens**	**Spartanburg**	**Grand Total**
Abbeville	0.13%	0.00%	0.01%	0.01%	0.00%	0.15%
Aiken	0.00%	0.00%	0.01%	0.01%	0.00%	0.03%
Anderson	11.72%	0.01%	0.76%	0.82%	0.11%	13.41%
Barnwell	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Beaufort	0.00%	0.00%	0.01%	0.00%	0.00%	0.01%

Table E-4: Where People Living in the Greenville-Spartanburg-Anderson MSA Work (Percentage Table)						
County Worked In	**County of Residence**					
	Anderson	**Cherokee**	**Greenville**	**Pickens**	**Spartanburg**	**Grand Total**
Berkeley	0.01%	0.01%	0.00%	0.00%	0.00%	0.02%
Charleston	0.01%	0.01%	0.02%	0.02%	0.02%	0.09%
Cherokee	0.01%	3.61%	0.05%	0.01%	0.46%	4.14%
Chester	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%
Colleton	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%
Darlington	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%
Dorchester	0.00%	0.00%	0.01%	0.00%	0.00%	0.01%
Edgefield	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Fairfield	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%
Florence	0.00%	0.00%	0.01%	0.00%	0.00%	0.01%
Georgetown	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Greenville	3.10%	0.10%	36.40%	3.39%	3.28%	46.27%
Greenwood	0.12%	0.00%	0.09%	0.01%	0.05%	0.27%
Hampton	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Horry	0.01%	0.00%	0.00%	0.00%	0.01%	0.02%
Kershaw	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Lancaster	0.01%	0.01%	0.01%	0.00%	0.00%	0.02%
Laurens	0.06%	0.01%	0.36%	0.03%	0.16%	0.61%
Lee	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Lexington	0.01%	0.00%	0.03%	0.00%	0.01%	0.05%
Marion	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
McCormick	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Newberry	0.00%	0.00%	0.01%	0.00%	0.00%	0.03%
Oconee	0.29%	0.00%	0.09%	0.52%	0.03%	0.93%
Orangeburg	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Pickens	0.97%	0.00%	0.58%	6.51%	0.04%	8.10%
Richland	0.02%	0.00%	0.04%	0.02%	0.02%	0.11%
Saluda	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Spartanburg	0.28%	0.89%	2.52%	0.18%	21.47%	25.34%
Sumter	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%
Union	0.01%	0.03%	0.03%	0.01%	0.12%	0.20%
York	0.01%	0.06%	0.02%	0.01%	0.03%	0.12%
Grand Total	16.77%	4.75%	41.07%	11.58%	25.83%	100.00%

Table E-5 shows that in the Greenville-Spartanburg-Anderson MSA, 81.96% of all people work in the same county they live in. There are 112,789 (or 26.07%) workers that live in Spartanburg County and work in the Greenville-Spartanburg-Anderson MSA. There are 112,686 (or 26.05%) people that work in Spartanburg County. This results in a net decrease of 103 workers in the county. Table E-6 also shows that when all commuting in the MSA is taken into account, only 3.99% of the intercounty flow comes from Spartanburg County.

Table E-5: County of Residence for the Greenville-Spartanburg-Anderson MSA						
County Worked In	**County of Residence**					
	Anderson	**Cherokee**	**Greenville**	**Pickens**	**Spartanburg**	**Grand Total**
Anderson	52,133	31	3,367	3,648	480	59,659
Cherokee	61	16,052	203	63	2,029	18,408
Greenville	13,766	431	161,906	15,095	14,586	205,784
Pickens	4,300	16	2,566	28,951	198	36,031
Spartanburg	1,264	3,937	11,205	784	95,496	112,686
Grand Total	71,524	20,467	179,247	48,541	112,789	432,568

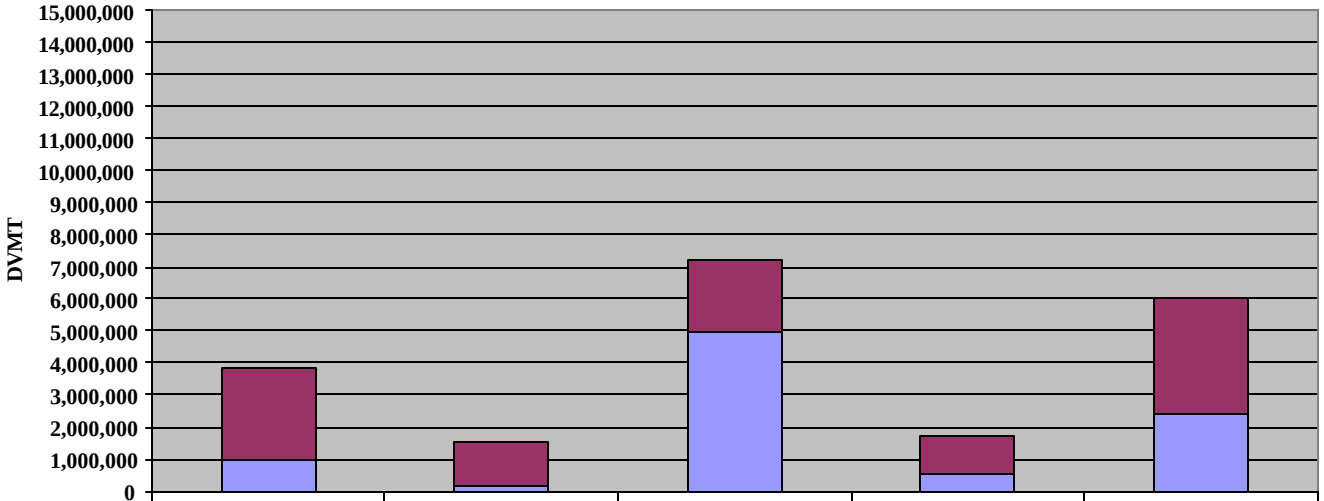
Table E-6: County of Residence for the Greenville-Spartanburg-Anderson MSA (Percentage Table)						
County Worked In	**County of Residence**					
	Anderson	**Cherokee**	**Greenville**	**Pickens**	**Spartanburg**	**Grand Total**
Anderson	**12.05%**	0.01%	0.78%	0.84%	0.11%	13.79%
Cherokee	0.01%	**3.71%**	0.05%	0.01%	0.47%	4.26%
Greenville	3.18%	0.10%	**37.43%**	3.49%	3.37%	47.57%
Pickens	0.99%	0.00%	0.59%	**6.69%**	0.05%	8.33%
Spartanburg	0.29%	0.91%	2.59%	0.18%	**22.08%**	26.05%
Grand Total	16.53%	4.73%	41.44%	11.22%	26.07%	100.00%
Intercounty Flow	4.48%	1.02%	4.01%	4.53%	3.99%	

Table E-7 shows the mobile source emissions in Spartanburg County in relation to the other counties in the MSA. Even though Spartanburg County has high onroad mobile source NO_x and VOC emissions, Federal fuel and engine standards will help lower these emissions in Spartanburg County.

Table E-7: Percent Mobile Source NO_x and VOC Emissions in the Greenville-Spartanburg-Anderson MSA					
County	**NO_x tons / day**	**Percent NO_x**	**County**	**VOC tons / day**	**Percent VOC**
Anderson	19.11	19.85%	Anderson	11.82	18.52%
Cherokee	7.33	7.61%	Cherokee	3.87	6.06%
Greenville	28.87	29.99%	Greenville	22.39	35.07%
Pickens	9.33	9.69%	Pickens	6.00	9.41%
Spartanburg	31.64	32.87%	Spartanburg	19.76	30.95%
Grand Total	96.28	100.00%	Grand Total	63.84	100.00%

Figures E-2 – E-6 show the urban and rural DVMT for the Greenville-Spartanburg-Anderson MSA. While the DVMT increases in Spartanburg County by 86.3% from 1990-2025, the character of the miles traveled changes very little. For example, in 1990, the DVMT is 59.8% rural and 40.2% urban, while in 2025, the DVMT is projected to be 64.9% rural and 35.1% urban.

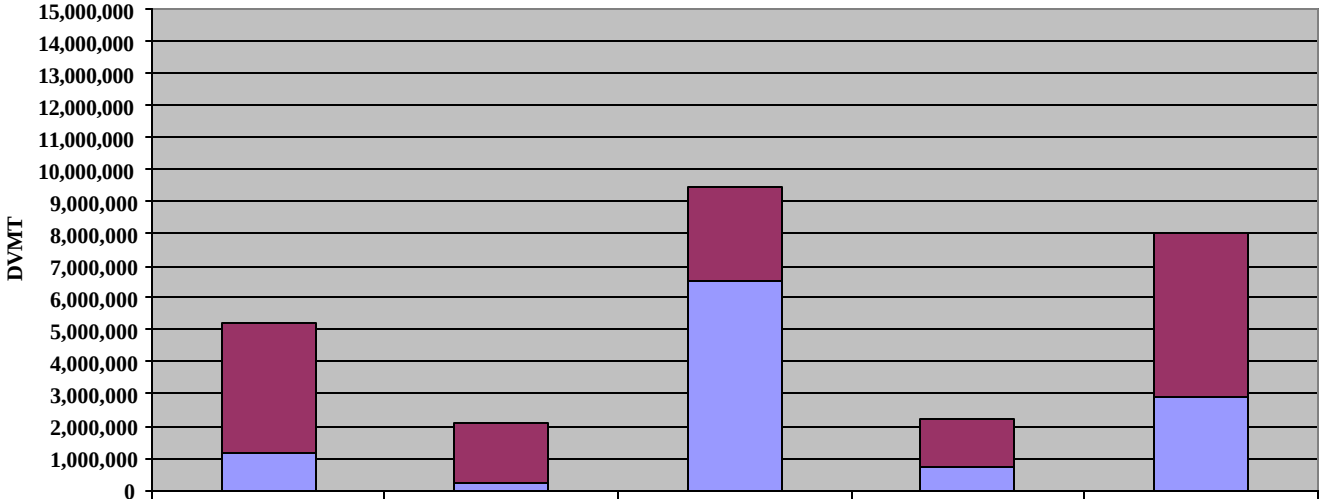
Figure E-2:
1990 Greenville-Spartanburg-Anderson MSA Urban vs. Rural DVMT



	Anderson	Cherokee	Greenville	Pickens	Spartanburg
Rural	2,857,004	1,329,289	2,201,020	1,188,366	3,625,092
Urban	957,992	208,716	4,989,460	544,066	2,437,783

County

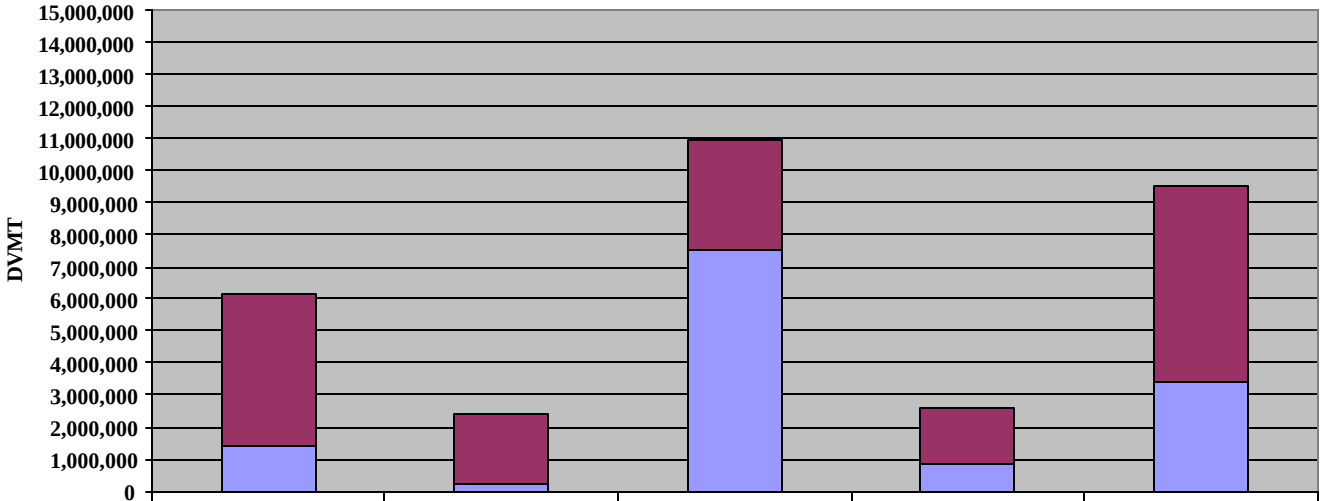
Figure E-3:
2000 Greenville-Spartanburg-Anderson MSA Urban vs. Rural DVMT



	Anderson	Cherokee	Greenville	Pickens	Spartanburg
Rural	4,007,896	1,837,837	2,910,155	1,479,815	5,153,275
Urban	1,199,298	225,251	6,511,554	744,928	2,888,307

County

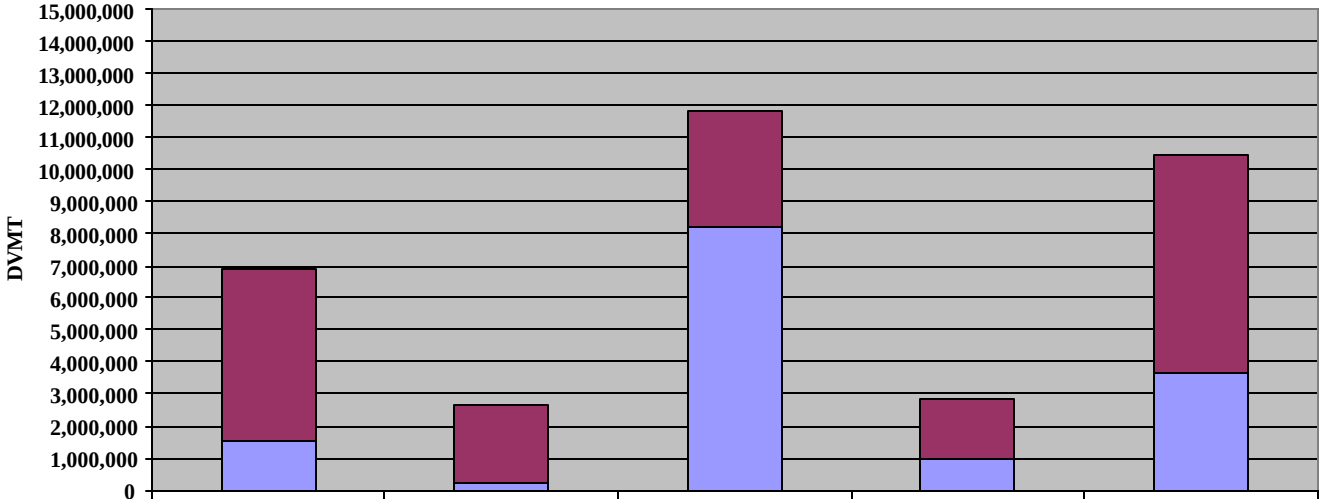
Figure E-4:
2007 Greenville-Spartanburg-Anderson MSA Urban vs. Rural DVMT



	Anderson	Cherokee	Greenville	Pickens	Spartanburg
Rural	4,780,709	2,161,478	3,372,998	1,749,499	6,115,034
Urban	1,401,023	252,372	7,559,421	879,174	3,386,253

County

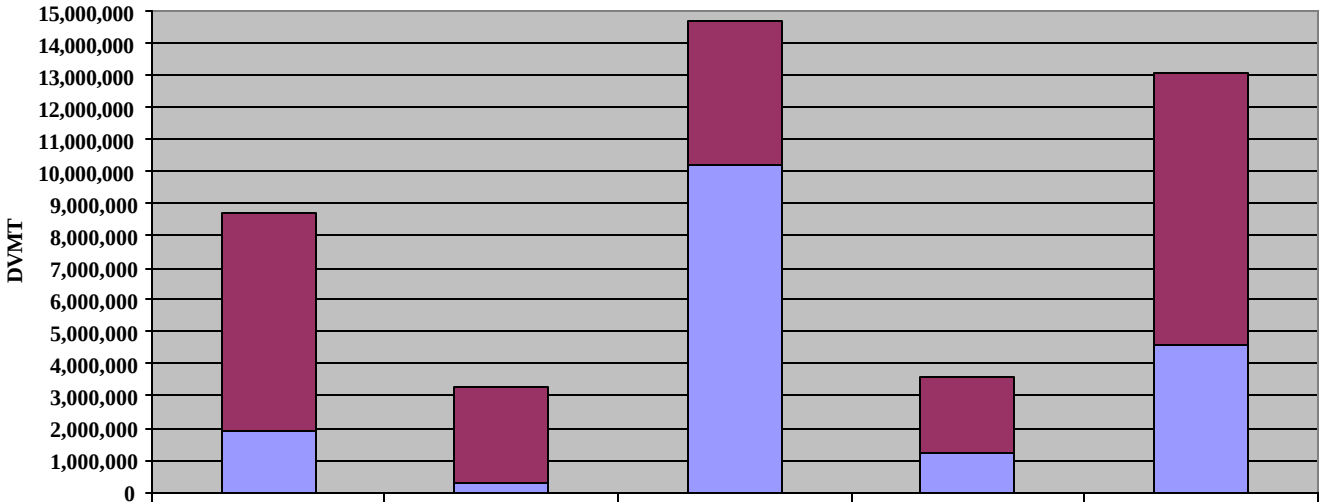
Figure E-5:
2012 Greenville-Spartanburg-Anderson MSA Urban vs. Rural DVMT



	Anderson	Cherokee	Greenville	Pickens	Spartanburg
Rural	5,332,719	2,375,132	3,648,804	1,894,928	6,740,494
Urban	1,545,113	266,902	8,191,197	953,892	3,689,204

County

Figure E-6:
2025 Greenville-Spartanburg-Anderson MSA Urban vs. Rural DVMT



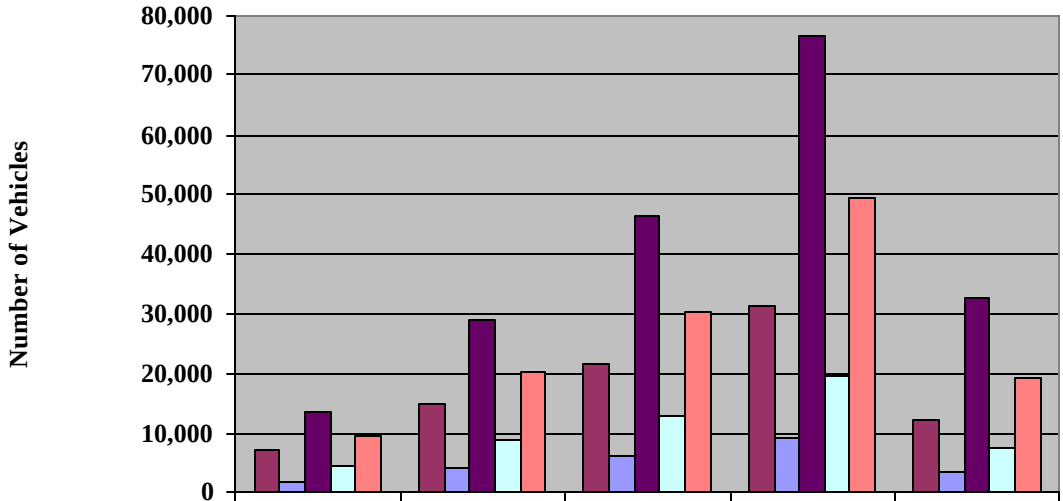
	Anderson	Cherokee	Greenville	Pickens	Spartanburg
Rural	6,767,945	2,983,782	4,527,504	2,403,353	8,497,628
Urban	1,919,745	319,371	10,177,988	1,209,829	4,589,111

County

Figure E-7[9] presents the motor vehicle registration data for the Greenville-Spartanburg-Anderson MSA. Only a small portion of the vehicles are pre-1981 model years. In 1981, new cars were outfitted with three-way catalysts, on-board computers, and oxygen sensors to help increase the efficiency of the catalytic converters. This figure shows that the majority of cars registered are model years 1991-1995. In 1991 the EPA established lower tailpipe standards for hydrocarbons and nitrogen oxides beginning with 1994 models.

[9] Data provided from SC Department of Public Safety, Division of Motor Vehicles

Figure E-7:
2000 Motor Vehicle DatGreenville-Spartanburg-Anderson MSA



	<1979	1980-1986	1987-1990	1991-1995	1996-2001
Anderson	7,121	14,896	21,425	31,432	12,024
Cherokee	1,863	4,265	6,049	9,255	3,512
Greenville	13,423	28,947	46,387	76,720	32,652
Pickens	4,495	8,745	12,989	19,573	7,447
Spartanburg	9,461	20,262	30,312	49,393	19,183

This data reflects 2000 registration figures, and many of the older vehicles will probably have been replaced with newer vehicles. These vehicle turnovers, combined with future national low sulfur fuel standards, the use of Onboard Diagnostic (OBD) systems and Onboard Refueling Vapor Recovery (ORVR), systems will help to offset any potential impacts from the increased emissions from mobile sources in this area.

F. Expected Growth (Including Extent, Pattern, and Rate of Growth)

Limited data is available in assessing expected growth for Spartanburg County, and no data is available for assessing future growth within the recommended area. Conclusions were drawn based on historical data from 1990, current data from 2000, and population projections for 2020 as contained in Table F-1. Economic growth, relative to population growth, is even harder to predict. No knowledge of major economic expansions is available. While it is certain that population counts will grow, it is only assumed that current economic factors will remain stable or that some economic growth will occur. It is reasonable to expect the majority of that growth to be located inside, or at least near, the recommended area boundary.

Table F-1: Historical and Projected Population and Population Density for Spartanburg and Cherokee Counties	
	Spartanburg County
Population, 1990[10]	226,793
Population, 2000[11]	253,791
Projected Population, 2020[12]	302,500
County Growth Rate, 2000 - 2020	19.19%

Spartanburg County's growth rate from 2000-2020 is 19.19%. Assuming the county growth is equally distributed throughout the county, the projected population of the recommended area for the year 2020 is 195,186 (163,761 in 2000 x 19.19% growth). However, equal distribution of growth is unlikely, particularly given that the northern part of the county is mountainous, the southern part of the county is rural, and the majority of the densely populated areas and businesses are contained within the recommended area.

Additionally, since the boundary includes the majority of Spartanburg County and already captures the area's urban population, it is reasonable to conclude that the boundary at least approximates, if not contains, the expected population growth, and hence the economic growth, for the area in the coming years.

G. Climatology / Meteorology

The overall climatology of an area is paramount to the formation and mass movement of secondary pollutants such as ozone throughout the lowest layers of the troposphere. As a result, though the overall emission volume may remain constant across a given monitoring site, the ambient concentration of ozone at that site may change according to even the most subtle shift in the overall weather pattern. This is indeed the rule across the whole of the State of South Carolina.

The "Ozone Season" in South Carolina runs from April 1 through October 31 of each year, roughly parallel to that experienced in most areas of the Southeastern United States. The main climatological feature influencing the overall weather pattern during this period is a large ridge of stable, sinking air known as the "Bermuda High." This semi-permanent feature is normally situated just off the South Atlantic Seaboard, with its core of anticyclonic circulation centered due east of South Carolina. The average strength and position of this ridge provides a steady southwesterly flow of moist, tropical air from the Gulf of Mexico that, under normal circumstances, keeps the lower atmosphere well mixed and quite humid. These are two main factors that normally provide conditions non-conducive to the formation of elevated levels of ozone.

When the Bermuda High becomes anomalously shifted from its normal position, conditions conducive to the formation of elevated ozone may occur in many areas of South Carolina. This is mainly the case in the months during the Ozone Season immediately following an El Nino winter. During this period, which only occurs once every 4 or 5 years, the Bermuda High flattens out and builds southwestward well into the Gulf of Mexico. This shifts the moist flow out of the Gulf to the west, well away from the South

[10] Data provided by US Census: 2000.
[11] Data provided by US Census: 2000.
[12] Data provided by EPA.

Atlantic Coast. With the core of the ridge virtually parked on top of South Carolina, air stagnation can occur.

The three main underlying causes of air stagnation under this shifted Bermuda High are lack of horizontal wind flow, a stable boundary layer, and, most importantly, reduced availability of ambient moisture. In such a situation, the lower atmosphere dries out considerably, with less cloud coverage available to absorb the incoming solar radiation (UV) needed for efficient conversion of ozone from its primary component pollutants. In addition, there is much less titration and/or deposition of the pollutant back to its basal components after nightfall, when the UV source is removed. Once ozone formation perpetuates, the stable air mass traps it, pooling it closer to the ground. With little horizontal wind flow available to mix the atmosphere, the pollutant takes much longer to disperse throughout the boundary layer.

Air stagnation under an anomalous Bermuda High occurs far too sparingly to account for every elevated ozone event in South Carolina. Frequently, elevated ozone readings have been monitored when conditions were not altogether favorable for its production in that particular area. It is in these cases where transport of ozone from upwind sources comes into play.

H. Geography / Topography

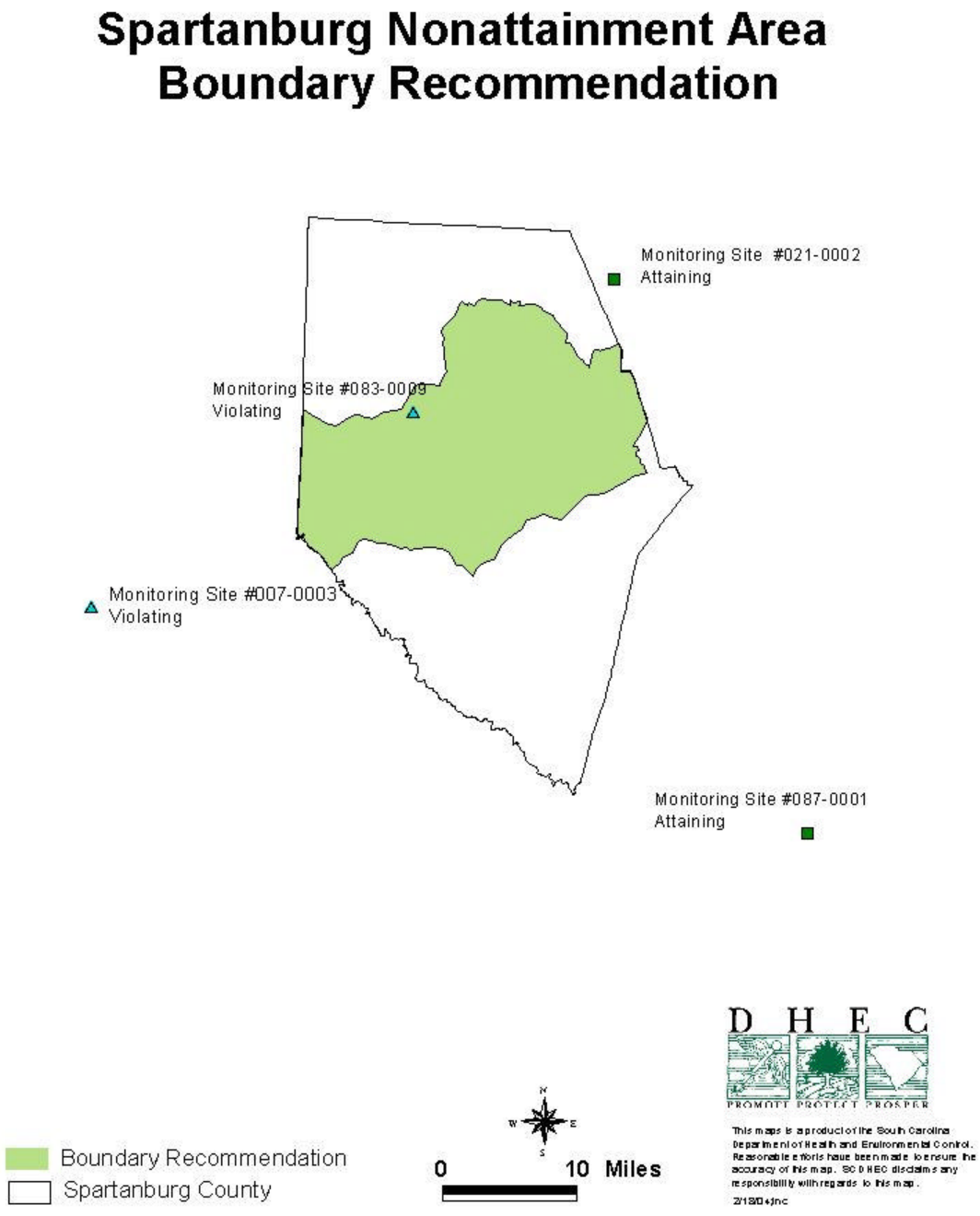
The topography of South Carolina is divided into two distinct areas, commonly known as the Piedmont and the Coastal Plain. Spartanburg County is located in the Piedmont Area. The line of demarcation runs from the eastern boundary of Aiken County through central Chesterfield County to the North Carolina border. Along this line elevations begin at about 300 feet and increase in steps to over 1,000 feet in the extreme northwestern counties, culminating in isolated peaks of 2,000 to over 3,500 feet above mean sea level. East of the line, there are evidences of outcroppings from the lower Appalachians in a ridge of low hills and rather broken country between the Congaree River and the north fork of the Edisto River, and also in a rather hilly and rolling region in the upper Lynches River drainage basin between the Catawba-Wateree and the Great Pee Dee Rivers. In about one-third of the coastal plain (or what is commonly known as the upper coastal plain), the elevations decrease rather abruptly from 300 to 100 feet, thence to the coast. The major part of the coastal area is not over 60 feet above mean sea level. In this region of lower levels, to the eastward and southward, the great swamp systems of the State predominate.

The slope of the land from the mountains seaward is toward the southeast, and all of South Carolina's streams naturally follow that general direction to the Atlantic Ocean. The South Piedmont section of the State is on the eastern slope of the Appalachian Mountains with the main ridge of the mountains about 30 miles west. To some extent these mountains act as a barrier for the wind and tend to protect the area from the full force of the cold air masses during the winter months. The relatively flat areas of the Central Plains and the coastal region allow free air movement and are conducive to effective dispersion of pollutants.

I. Jurisdictional Boundaries

Figure I-1 shows the Department's recommended Spartanburg nonattainment area boundary.

Figure I-1



Starting Point is at the Greenville - Spartanburg County Line at SC 296 and the Enoree River.
Follows Greenville - Spartanburg County Line north to Beaverdam Creek.
Follows Beaverdam Creek southeast for 1.7 miles to SC 357.
Follows SC 357 northeast for 1.7 miles to Holly Springs Road (SC 358) and Greer Road.
Follows Greer Road northeast for 1.0 mile to Hampton Road.
Follows Hampton Road north for 0.2 miles to Montgomery Road.
Follows Montgomery Road east for 0.8 miles to North Tyger River.
Follows North Tyger River southeast for 2.3 miles to Inman Road (SC 292).
Follows Inman Road (SC 292) North for 1.5 miles to Little Mountain Road (S-217).
Follows Little Mountain Road (S-217) southeast for 0.3 miles to Israel Drive.
Follows Israel Drive northeast for 0.5 miles to Lake Cooley.
Follows Lake Cooley northeast for 0.1 miles to Waterford Drive.
Follows Waterford Drive northeast for 1.0 mile to Lismore Drive.
Follows Lismore Drive east for 0.8 miles to Blackstock Road (S-40).
Follows Blackstock Road (S-40) northwest for 0.3 miles to Old Settle Road.
Follows Old Settle Road northeast for 1.2 miles to Lawson Fork Road.
Follows Lawson Fork Road north for 0.2 miles to Lawsons Fork Creek.
Follows Lawsons Fork Creek east for 1.8 miles to I-26.
Follows I-26 north for 1.0 mile to Greene Creek.
Follows Greene Creek east for 0.1 miles to Meadow Creek.
Follows Meadow Creek north for 2.2 miles to Calvery Road (S-977).
Follows Calvery Road (S-977) northeast for 0.1 miles to Gate Road.
Follows Gate Road north for 1.7 miles to Chapman Road (S-54).
Follows Chapman Road (S-54) east for 0.3 miles to SC 9.
Follows SC 9 southeast for 0.3 miles to Lake Bowen Dam Road (S-213).
Follows Lake Bowen Dam Road (S-213) northeast for 1.9 miles to Municipal Reservoir.
Follows Municipal Reservoir east for 3.4 miles to Pacolet River.
Follows Pacolet River southeast for 3.4 miles to Taylor Blaylock Lake.
Follows Taylor Blaylock Lake southeast for 5.9 miles to the Pacolet River.
Follows Pacolet River southeast to US 221.
Follows the Spartanburg Metropolitan Planning Organization Boundary to the Spartanburg and Cherokee line
Follows Cherokee / Spartanburg County Line southeast to Mill Branch
Follows Mill Branch southwest for 1.8 miles to Pacolet River
Follows Pacolet River southeast for 2.5 miles to Richland Creek
Follows Richland Creek southwest for 2.6 miles to Pine St (US 176)
Follows Pine St (US 176) southeast 1.2 miles to Southport Road (SC 295)
Follows Southport Road (SC 295) northeast for 2.7 miles to Dairy Ridge Road
Follows Dairy Ridge Road southwest for 2.4 miles to S-321
Follows S-321 southwest for 0.3 miles to SC 56
Follows SC 56 south for 1.1 miles to Fairforest Creek
Follows Fairforest Creek west for 1.3 miles to Foster Creek
Follows Foster Creek southwest for 2.2 miles to Freedom Trail
Follows Freedom Trail northwest for 0.4 miles to Independence Drive
Follows Independence Drive southwest for 0.4 miles to Patriot Road
Follows Patriot Road west for 0.3 miles to Stone Station Road (SC 215)
Follows Stone Station Road (SC 215) northwest for 1.0 mile to US 221
Follows US 221 southwest for 5.0 miles to South Tyger River
Follows South Tyger River northwest for 5.1 miles to SC 417
Follows SC 417 southwest for 0.1 miles to Lightwood Knot Road

Follows Lightwood Knot Road northwest for 2.5 miles to Greenpond Road (S-62)
Follows Greenpond Road (S-62) north for 0.3 miles to Gaston Drive
Follows Gaston Drive north for 0.3 miles to John B White Sr Boulevard (SC 296)
Follows John B White Sr Boulevard (SC 296) southwest for 5.4 miles back to the starting point on the Greenville - Spartanburg County Line at the Enoree River.

J. Level of Control of Emission Sources

Local Controls

In December 2002, Spartanburg County entered into an Early Action Compact (EAC) with the Department and EPA, Region 4. Each of the Upstate Counties (Spartanburg, Anderson, and Greenville) recognizes the value and importance of the health of the citizens and the related need for clean air; however, each recognizes that individual county planning is the quickest way to achieve results. Through its participation with the EAC, Spartanburg County is exploring countywide local control strategies to be implemented no later than April 2005. These strategies include designating an ozone action coordinator; encouraging the use of hybrid vehicles and alternative fuels; evaluating the use of high occupancy vehicle lanes; implementing open burning restrictions; and supporting Department statewide efforts. A complete listing of the emission reduction strategies for Spartanburg County was included in their December 2003 Progress Report and will be updated in March 2004.

Emission Control Strategies

The Department is primarily responsible for ensuring attainment and maintenance of the air quality standards established by EPA. Under section 110 of the CAA and related provisions, the Department must submit, for EPA approval, state implementation plans that provide for the attainment and maintenance of such standards through control programs directed to sources of the pollutants involved. The Department, in conjunction with EPA, also administers the prevention of significant deterioration (PSD) programs for these pollutants. In addition, Federal programs provide for nationwide reductions in emissions of these and other air pollutants under Title II of the CAA, which involves controls for automobile, truck, bus, motorcycle, off-road engine, and aircraft emissions. Since its inception in 1973, the Department has worked diligently to carry out the task of enforcing the CAA. The Department has also been delegated the authority to administer the new source performance standards under section 111 of the CAA and the national emission standards for hazardous air pollutants under section 112 of the CAA. During the past decade, the air quality in South Carolina has complied with all air quality standards, an accomplishment very few other States can claim.

If additional control measures are required to attain the air quality standard, the Department has the statutory authority to promulgate and implement regulations and to require more stringent controls on industrial and mobile sources to realize appropriate emissions reductions outside of nonattainment areas. Further, our recent actions, such as addressing NO_x emissions from stationary sources, demonstrate our ability and political will to implement controls to improve air quality statewide rather than on an area or county level basis.

The Department proposed R.61-62.5, Standard 5.2, Control of Oxides of Nitrogen (NOx) on January 8, 2004. The purpose of this regulation is to reduce or regulate the growth of ozone precursors so that the ozone monitors in the state are attaining the ozone standard in 2007. When fully implemented as proposed, this new regulation has the potential to reduce 3,000 tons of NO_x from these sources.

As part of the Early Action Compact (EAC) process another regulation that the Department is revising in an effort to reduce NO_x emissions statewide is R. 61-62.2, *Prohibition of Open Burning*. The most

significant revisions to this regulation are as follows: deleting the exception for the burning of household trash, modifiying the exception for the burning of construction waste, and revising the exception for fires set for the purpose of firefighter training. The burning of household trash and construction waste presents health and environmental concerns for many communities. Elimination of the burning of household trash will result in a statewide reduction of 2,379 tons per year of NO_x and 11,896 tons per year VOC. While the revisions to the burning of construction waste and fires set for the purpose of firefighter training are more difficult to quantify, these revisions will decrease NO_x and VOC emissions from these activities.

Early Action Plan

The health of the citizens of South Carolina is a primary concern and the Department continues to seek proactive measures to meet our commitment to public health and environmental protection. South Carolina has been in attainment of the 1-hour ozone standard for the past decade, and will make every effort to attain the new 8-hour ozone air quality standard in all areas of the State as expeditiously as possible.

EPA has provided an option for areas currently meeting the 1-hour ozone standard, like those in South Carolina, to attain the 8-hour ozone standard by December 31, 2007, and obtain cleaner air sooner than Federally mandated. This option requires an expeditious time line for achieving emissions reductions sooner than expected under the 8-hour ozone implementation rulemaking, while providing "fail-safe" provisions for the area to revert to the traditional SIP process if specific milestones are not met. Forty-five of South Carolina's forty-six counties have entered into Early Action Compacts. This action indicates that the local governments in the State of South Carolina are very concerned with air quality. Many of the counties entering into the Early Action Compacts do not have problems meeting the air quality standard and yet are still willing to plan and work with other areas to implement controls to ensure early attainment of the standards.

Interested stakeholders (i.e., local, State, and Federal government, citizens, public interest groups, and the business community) have been and will continue to be involved in the planning. By signing the Early Action Compact (EAC), EPA is agreeing to defer the effective date of the nonattainment designation for participating areas. However, areas that enter into an EAC but do not meet all of the terms of the EAC, including established milestones, will forfeit participation and be designated according to requirements within EPA's 8-hour ozone implementation rule. At a minimum, those requirements will include Transportation Conformity and nonattainment New Source Review.

Local areas are required to develop and implement a local early action plan that will promote the area's attainment by December 31, 2007, and maintenance of the standard until at least 2012. The local area must adopt local control strategies necessary to demonstrate attainment of the 8-hour ozone standard. The final local plan is due to the Department in March 2004.

The Department is required to develop and implement a State early action SIP demonstrating the participating area's attainment by December 31, 2007, and maintenance until at least 2012. The Department is currently evaluating the possibility of projecting out to 2017 to evaluate the air quality ten years after the "attainment" date. The SIP is due to EPA by December 31, 2004. The State must adopt local control strategies necessary to demonstrate attainment of the 8-hour ozone standard. Potential control strategies were identified to EPA on June 16, 2003. Final strategies are to be implemented no later than April 1, 2005. If the monitors in the nonattainment areas reflect attainment by December 31, 2007, the area will be designated as attainment and no additional requirements will be imposed (i.e., Transportation Conformity and nonattainment New Source Review).

Ozone Forecasting – Spare The Air

The South Carolina Spare the Air campaign was created by the Department's Bureau of Air Quality to educate citizens about air quality and its relationship to their health. This program provides information to the public about their air quality and warns them when levels of ozone are expected to be elevated so that they can better protect their health as well as allow them the opportunity to take actions to reduce emissions from their own activities. During the period of May 1 through September 30, the Bureau of Air Quality staff meteorologists produce daily ozone forecasts for the Upstate, Midlands, Pee Dee, and Central Savannah River area. The forecasts are provided utilizing the Air Quality Index (AQI) color scale to indicate levels of ozone in the air. Each category in the AQI is represented by a color and includes a cautionary statement for air quality conditions and the appropriate citizen response. Green represents the level being good, yellow for moderate conditions, orange for unhealthy to sensitive groups, and red for unhealthy to everyone.

South Carolina recognizes the importance of providing our citizens with information on air pollution levels where they live and work. We have implemented a comprehensive ozone-forecasting program that is not limited to a few areas but instead covers twenty-six of the forty-six counties in our state. We have partnered with North Carolina's Department of Environment and Natural Resources to provide a forecast for an additional three counties along the State border. Our citizens are alerted on a daily basis during ozone forecasting season as to the predicted quality of the air so that they may take actions as they believe appropriate to better protect their health. We have expended and continue to expend significant resources to provide this service to our citizens. This daily forecast is a much better indication to the public of when they need to act to avoid exposure to high ozone levels than a nonattainment designation, which is a one-time publication in the *Federal Register*.

The forecasts are broadcast on local television and radio stations during the daily weather forecasts, distributed by email or fax to over 300 businesses, industries, organizations, and individuals, and through an agency-created website (www.scdhec.net/baq/ozone). In the high traffic areas surrounding Columbia and Greenville, warnings are also posted on Department of Transportation's message boards along the major interstates. To promote the efforts, Governor Mark Sanford declared the first week of May, 2003, "Ozone Awareness Week." The Department also hosts official "Ozone Season Kick-Off Events" around the state to annually review the warning system and ozone reduction opportunities within South Carolina.

Ozone Education and Outreach

Additionally, other elements that fall under the "Spare the Air" initiative involve education and outreach to school-aged youth and persons with chronic respiratory conditions. In cooperation with the Department's Bureau of Land and Waste Management, air quality training in the environmental curriculum titled "Action for a Cleaner Tomorrow" is provided to teachers across the state. To assist Department efforts in preventing future air pollution, the Bureau of Air Quality staff work with teachers and students through classroom resources such as prepared special lesson plans, presentations, and exhibits. Teachers are also encouraged to participate in the "Ozone Action Classroom" initiative to educate students on the dangers of ground-level ozone. Additional partners in the "Ozone Action Classroom" include the South Carolina Asthma Planning Alliance and the South Carolina Public Health Association. These groups are together, and individually, working to promote awareness of the link between ground-level ozone and air quality conditions that can trigger asthma attacks in persons with respiratory conditions.

Permitting Program

In South Carolina anyone who plans to construct, add to, or alter a source of air contaminants must first submit an application for a permit. Once a construction permit is issued (or construction approved), the applicant may then begin construction after waiting the required time period. Once construction has been completed, the applicant then requests a permit to operate. An operating permit can take several different forms based upon the quantity of the pollutant(s) to be emitted. In South Carolina permits are not only required for "major" sources (sources with emissions exceeding federal thresholds); they are also required for facilities emitting smaller quantities as well. This comprehensive permitting process allows more control over sources of emissions within South Carolina.

Title V Permitting Program

The Clean Air Act Amendments of 1990 included sweeping new revisions requiring all states to develop operating permit programs that meet certain federal criteria. The states, in turn, are to require sources to obtain permits that contain all of their Clean Air Act requirements.

On July 21, 1992, EPA issued a regulation outlining the specific minimum requirements that states must meet in their operating permits program. State and local agencies were required to submit programs to EPA by November 15, 1993, and EPA is required to approve or disapprove these programs within one year of their submittal.

EPA's operating permits regulation requires states to develop comprehensive operating permit programs that cover "major" sources of air pollution. Major sources include (1) those that emit 100 tons/year or more of volatile organic compounds, carbon monoxide, lead, sulfur dioxide, nitrogen dioxide, or particulate matter (PM-10); and (2) those that emit 10 tons/year or more of any single toxic air pollutant (specifically listed under the Clean Air Act), or those that emit 25 tons/year or more of a combination of toxic air pollutants. The primary purpose of the operating permits program is to improve enforcement by issuing each source a permit that consolidates all of the Clean Air Act requirements into a federally enforceable document.

The State of South Carolina received full program approval of its Title V Program on June 26, 1995. In July 2003, EPA Region 4 conducted a comprehensive review of South Carolina's Title V permit program. EPA's review of South Carolina's program found that it was operating at a very high level of proficiency.

New Source Review Permitting

Congress established the New Source Review (NSR) Program as part of the 1977 Clean Air Act Amendments and modified it in the 1990 Amendments. NSR is a preconstruction permitting program that serves two purposes. First, it ensures the maintenance of air quality standards when factories, industrial boilers, and power plants are modified or added. In areas with unhealthy air, NSR assures that new emissions do not slow progress toward cleaner air. In areas with clean air, especially pristine areas like national parks, NSR assures that new emissions fall within air quality standards. Second, the NSR program assures that state of the art control technology is installed at new plants or at existing plants that are undergoing a major modification.

South Carolina has a SIP approved NSR program with its own NSR rules. Therefore, South Carolina has full authority to issue both major and minor NSR permits. Because there are no nonattainment areas in South Carolina at present, the only applicable major NSR permitting regulations are the Prevention of Significant Deterioration (PSD) regulations.

In July 2003, EPA Region 4 conducted a comprehensive review of South Carolina's NSR program. The EPA determined that South Carolina has a thorough and well-organized process for permitting sources and a good comprehension of regulatory requirements and policies.

Smoke Management Program

South Carolina has a Smoke Management Program (SMP) that is certified in accordance with EPA's *Interim Air Quality Policy on Wildland and Prescribed Fires (April 23, 1998)*. The SMP involves coordination between the Department and the South Carolina Forestry Commission when addressing the impact of smoke on air quality by following guidelines that define smoke sensitive areas, amounts of vegetative debris that may be burned, and atmospheric conditions suitable for burning. The SMP can be used as a management tool for reducing ozone levels.

Government Fleets

In 1992 the U.S. Congress passed legislation to promote the use of alternative fuel vehicles (AFVs). This legislation was passed to improve air quality and reduce the nation's dependence on foreign oil. The new legislation became known as the Energy Policy Act (EPAct). This Act requires that all Federal and State fleets, as well as private sector fuel providers such as utilities, begin purchasing AFVs by 1994. Over a period of seven years, EPAct required a gradual phase-in of the purchase of AFVs. By 2001 EPAct required that 75% of Federal and State fleets be composed of AFVs. To date, South Carolina is in compliance with all EPAct requirements because of a cooperative effort within the State agencies and the operation of a unified State plan. [13]

On October 18, 2001, former Governor Hodges signed an Executive Order in strong support of the use of alternative fuels. The Order states that whenever practical and economically feasible, State agencies use alternative fuels when operating alternative fuel vehicles.

Currently, the State operates 1,370 alternative fuel vehicles. The types of alternative fuel vehicles that the State operates include the Bi-fuel Ford F-150, Flex Fuel Taurus, Dodge Caravan, and Chevrolet S-10 Pick-up. By purchasing alternative fuel vehicles, the State is making a viable effort to reduce mobile source emissions in South Carolina. An ethanol pump has been installed in the Columbia area so that the flex fuel vehicles can provide the designed benefits. The State fleet also operates hybrid vehicles such as the Honda Insight and Toyota Prius.

K. Regional/National Emission Reductions

In addition to the initiatives and regulations that have been implemented to reduce the level of VOC emissions, standards to reduce NO_x levels have also been supported on the national level. New national standards will provide tremendous air quality benefits, particularly those that will address pollution from mobile sources. Mobile source emissions contribute to air pollution in South Carolina. Strong national programs are the only way to adequately, economically, equitably, and reasonably address pollution from this source sector. The Department believes that the implementation of these regulations and reduction efforts will provide significant assistance towards statewide compliance with the air quality standards, especially in the areas where it is needed the most, our urbanized areas.

[13] South Carolina State Budget and Control Board, General Services Division, Office of State Fleet Management

Standards For Tailpipe Emissions

Tier 2 is a tailpipe emissions rule that sets new and more stringent exhaust standards. This standard focuses on reducing emissions of ozone-forming gases (NO_x and PM) and applies to new passenger cars and light-duty trucks. The phase-in of the tailpipe emissions standards will begin in 2004 for passenger cars and light-duty trucks. This standard will be completely phased-in by 2007. The phase-in period for heavy-duty light trucks (HDLTs) and medium-duty passenger vehicles (MDPVs) begins in 2008. The standard will be completely phased-in for this group by 2009. Tier 2 standards will reduce new vehicle NO_x levels to an average of 0.07 grams/mile. [14]

Gasoline Sulfur Standards

The gasoline sulfur standards focus on reducing average sulfur level in gasoline to 30 ppm. Refiners and importers will be required to meet a corporate average gasoline standard of 120 ppm and a cap of 300 ppm beginning in 2004. This standard will then be reduced to 30 ppm with a cap of 80 ppm. Implementation of these standards will be the equivalent of taking 164 million cars off the road. [12]

Standards For Heavy-Duty Engines

The new standard for heavy-duty engines will also help to reduce mobile source emissions. This standard will become 100% effective for diesels beginning in the 2007 model year. Included in this standard is a reduction for NO_x and non-methane hydrocarbons. The reduction requires a reduction of 0.20 gram/brake horse-power-hour (g/bhp-hr). The phase-in period for this requirement will be between 2007 and 2010 for diesel engines.

Highway Diesel Fuel Sulfur Standards

On June 1, 2006, refiners will be required to start producing diesel for use in highway vehicles with a sulfur content of no more than 15 ppm. Highway diesel fuel sold as low sulfur fuel at the terminals will be required to meet the 15 ppm sulfur standard by July 15, 2006. Highway diesel fuel sold as low sulfur fuel by retail station and fleets must meet the 15 ppm sulfur standard by September 1, 2006. By mid 2006, this standard will reduce sulfur levels in diesel by 97 percent.

Non-Road Diesel Engines and Fuel

EPA recently proposed emissions reductions from off-road diesel engines and low-sulfur fuel requirements for these same engines. By 2014 emissions should be reduced by more than 90 percent and when fully phased in, NO_x emissions from this equipment would be reduced by 825,000 tons. Beginning in 2007, the sulfur content in the diesel fuel used in these off-road engines would be reduced from an uncontrolled 3,400 parts per million to 500 ppm in 2007 and then to 15 ppm in 2010. As non-road engines make up 5.21% of the NO_x inventory in South Carolina, emission reductions from this sector will be a tremendous benefit to our air quality.

NO_x SIP Call

The NO_x State Implementation Plan (SIP) Call is the common name given to a final rule that EPA published on October 27, 1998 (63 FR 57355). The rule requires South Carolina and numerous other states to reduce their summertime emissions of NO_x in order to reduce the interstate transport of ozone and its precursors.

[14] U.S. EPA Office of Transportation and Air Quality

To facilitate these reductions, the rule establishes a NO_x budget trading program in which each applicable state is given a summertime NO_x budget which they cannot exceed. The budget for each state assumes certain reductions on specific types of units. The units involved in the trading program are units that serve a generator with a nameplate capacity greater than 25 MWe, referred to as electrical generating units (EGUs); and large boilers that have a maximum design heat input greater than 250 mm Btu/hr, referred to as non-EGUs. The budget for EGUs is based upon 85 percent reductions from uncontrolled levels while the budget for the non-EGU category is based on 60 percent reductions from uncontrolled levels. The rule also calls for controls on cement kilns and large internal combustion engines, but these units are not part of the trading program.

South Carolina's NO_x budget for sources subject to the NO_x SIP Call was reduced from a baseline of 156,137 tons to 128,524 tons. This reflects a drop in overall, summertime NO_x emissions of 18 percent.

The rule allows the regulated community a great deal of flexibility. Rather than dictate the types and levels of controls, sources subject to the rule have the ability to determine where it is most cost effective to apply pollution controls. As a result, there is less certainty for states in terms of predicting where NO_x reductions may occur. So for instance, sources may choose to install pollution control equipment and sell their surplus NO_x allowance or they may choose not to install controls and simply buy the NO_x allowances they need. One significant constraint is that from May 1 to September 30 of each year, units subject to the requirements of the NO_x SIP Call must have an allowance of NO_x for every ton of NO_x that they emit.